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No. 6647 VOL. CCLX

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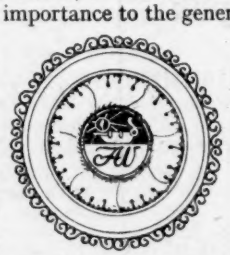

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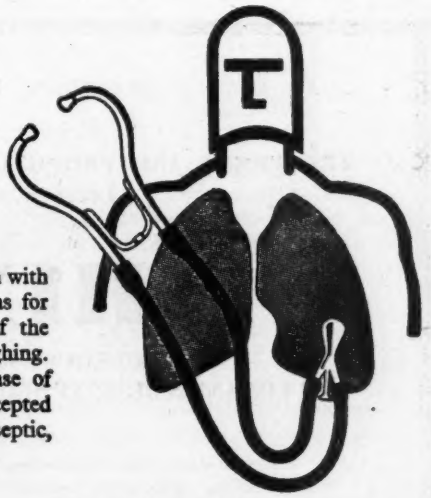

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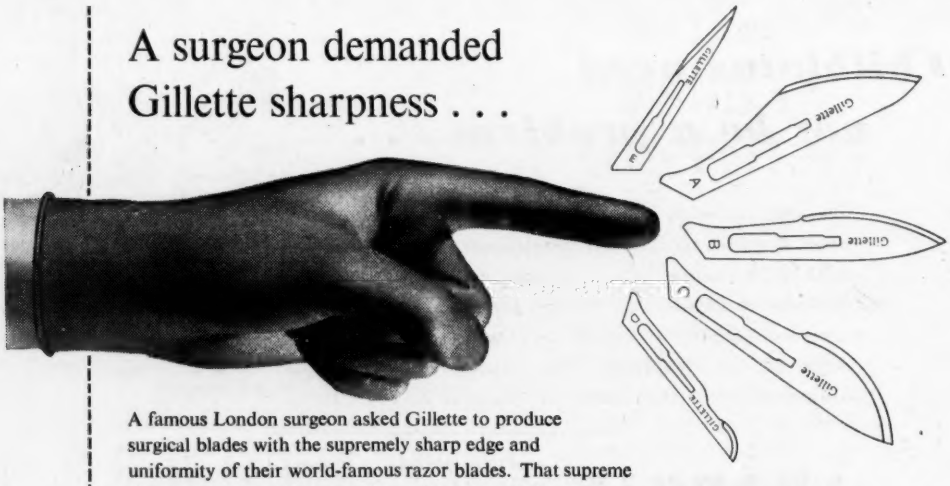

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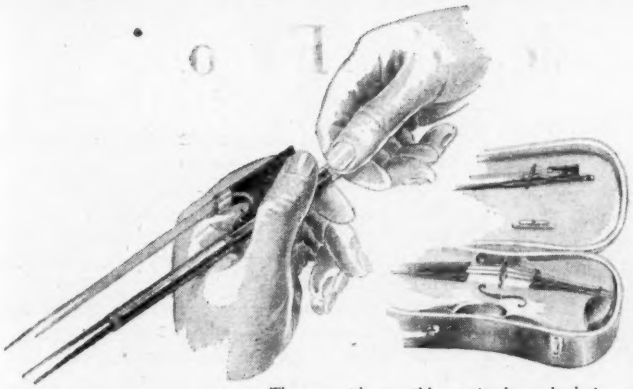

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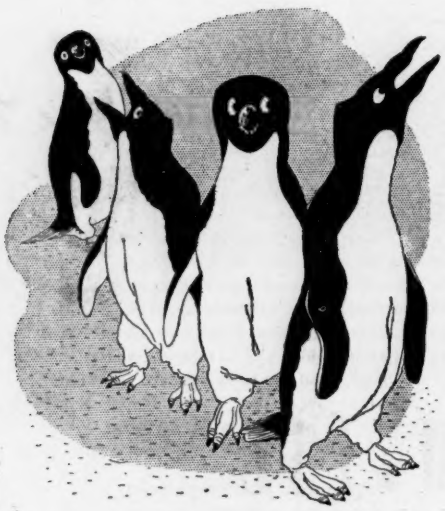

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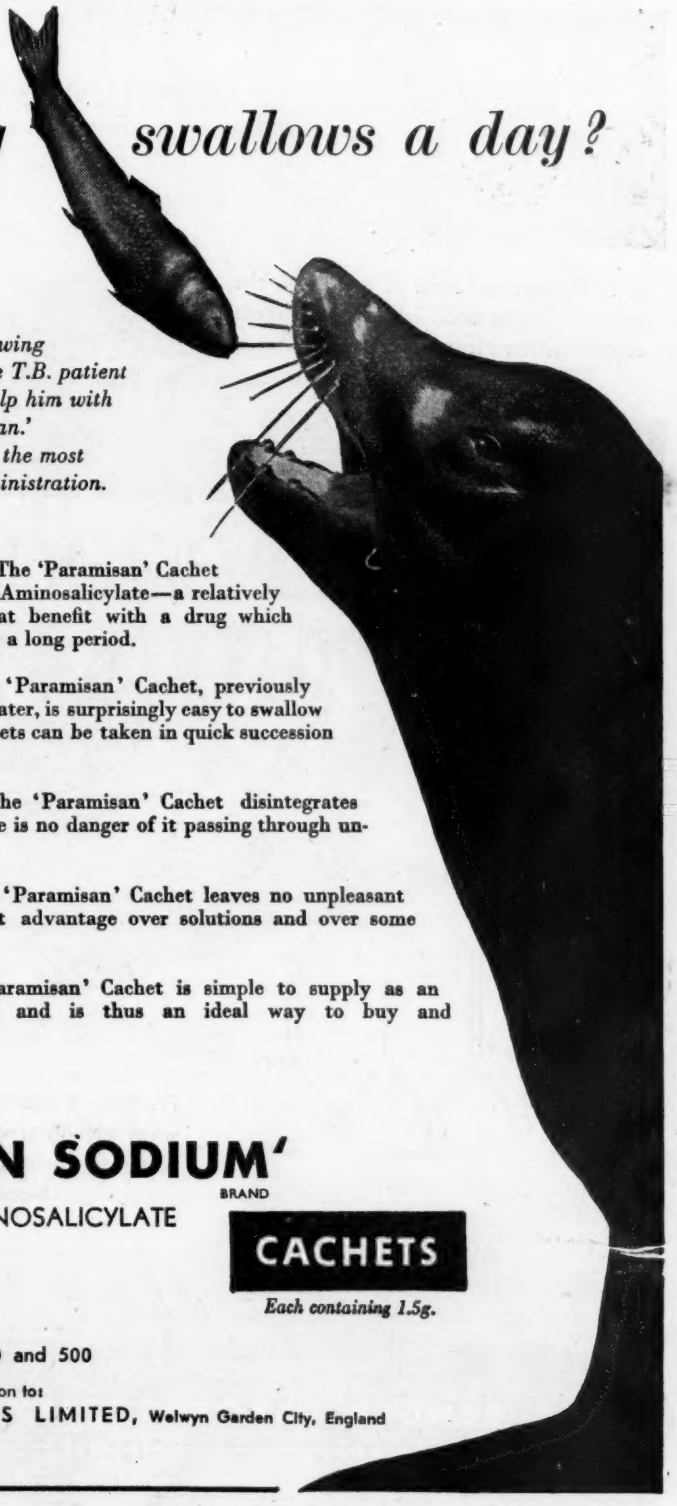

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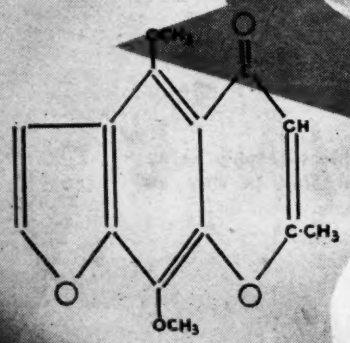

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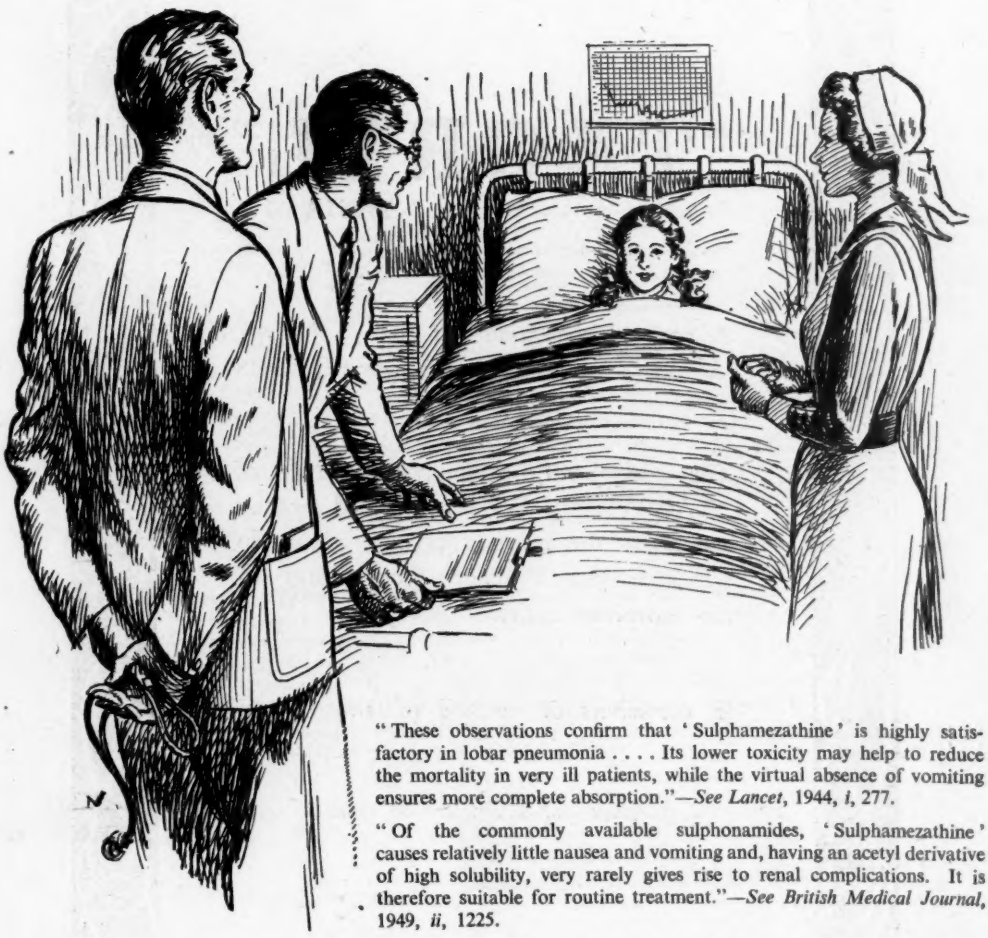

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PROPER USE OF THE HOSPITAL IN TREATMENT OF THE AGED SICK

LORD AMULREE
M.A., M.D. Camb., F.R.C.P.
ASSISTANT PHYSICIAN

A. N. EXTON-SMITH G. S. CROCKETT
M.A., M.B. Camb., M.R.C.P. M.A., M.B. Camb. M.R.C.P.
MEDICAL REGISTRARS

UNIVERSITY COLLEGE HOSPITAL

SINCE the introduction of the National Health Service, two years ago, one of the more formidable problems has been the care of the aged sick. General practitioners throughout the country know well the difficulties of getting their aged patients into hospital. Harold Stassen, in an article called "Granny is Gone," has singled out for criticism this aspect of the health service in Britain, and tells the story of one old lady who died of pneumonia, because she could not be found a bed in hospital (see Ogilvie 1950). We hope to show in this article how a service, based on a hospital, can be evolved to provide better facilities for the care of the aged sick.

Short Stay In Hospital

We have already described the state of affairs in St. Pancras Hospital when this work was begun (Exton-Smith and Crockett 1949). It is now possible to give figures of the results of a year's treatment, and in so doing the patients have been divided into two categories. In the first category are the "inherited" patients (those present at the time of the take-over); in the second category the "new" patients (those admitted during the year June 1, 1949, to May 31, 1950).

The disposal, over a year, of 155 inherited patients is shown in table I. These bare figures give rather a gloomy view of the chances of rehabilitation and ultimate discharge of patients who have been in hospital for more than two years. We can say, however, that though 95% of these patients were at one time bedridden, by the end of the year their physical state and mental outlook had improved so much that the bedridden cases had been reduced to 10%. The patients composing this 10% have gross physical deformities which make it impossible for them to sit in chairs. Many of these deformities we believe were preventable.

Table II shows the disposal, over a year, of 89 new patients. Of the 29 remaining in the hospital, we consider that 18 (20% of the 89) are suitable for hostel accommodation; and in fact some of these patients are now awaiting the opening of a hostel which is to be attached to the hospital. Only 11 of the 29 (about 13% of the 89) are regarded as irremediable. Only a small number of new patients were admitted during the year, because the total number of beds allocated to aged patients is being reduced from 155 to 120.

The considerable difference in the average length of stay of the two groups of patients has led us to consider whether these groups were comparable. In one way they were not, for none of the inherited patients had been admitted direct from home: they had come from other hospitals where they had usually already spent several months, and they were transferred to St. Pancras Hospital because at that time there was no solution to their problem other than continued hospital care.

We contend that in many of these cases this solution was not the only one and that if this type of patient be dealt with in the manner we outline below many needless hospital admissions will be avoided. If so, a great saving will be made in hospital beds, the maintenance of which costs the community so much money and staff. Indeed, if the existing beds were kept free of those who do not require hospital care, the 6000 hospital beds for the chronic sick* now unused through lack of nursing staff might turn out to be redundant. We believe that the demand for still more nursing recruits, at a time when there are more nurses in the country than there ever has been in the past, is unjustified.

Table I shows that 155 patients have been in hospital for an average of thirty-two months (at a cost of about £220,000). We believe that only in very exceptional cases need a patient remain in hospital for as long as thirty-two months. Table II shows that the average length of stay of the "new" patients is about ten weeks. This suggests that if, in a period of 32 months, these 155 hospital beds had been employed for their proper purpose—the active treatment of the sick—they could have accommodated 1200 "new" patients at the same cost to the hospital. This turnover in itself would have eliminated a long waiting-list. The longer the aged patient must wait before gaining admission to hospital the more difficult and longer his treatment becomes. Waiting-lists are thus conducive to long stay in hospital, the two tending to produce a vicious circle as the turnover diminishes.

* Answer to Parliamentary Questions, *Hansard*, March 16, 1950.

TABLE I—DISPOSAL OF "INHERITED" PATIENTS DURING A YEAR

—	No. in hospital Jan. 1, 1949	Disposal between Jan. 1, 1949, and Dec. 31, 1949				Average length of stay		Average age (years)
		(a) Died	(b) Discharged	(c) Transferred	(d) Remain	Groups (a), (b), and (c)	Group (d)	
Males ..	74	12	6	2	54	28 months	33 months	71
Females ..	81	13	2	4	62	30 months	34 months	75
Total ..	155	25 (16%)	8 (5%)	6 (4%)	116 (75%)	—	—	—

TABLE II—DISPOSAL OF NEW PATIENTS ADMITTED BETWEEN JUNE 1, 1949, AND MAY 31, 1950

—	No. admitted	Disposal between June 1, 1949, and May 31, 1950				Average length of stay		Average age (years)
		(a) Died	(b) Discharged	(c) Transferred	(d) Remain	Groups (a), (b), and (c)	Group (d)	
Males ..	39	13	10	3	13	8 weeks	9 weeks	70
Females ..	50	13	13	8	16	11 weeks	14 weeks	77
Total ..	89	26 (29%)	23 (26%)	11 (12%)	29 (33%)	—	—	—

Economic considerations aside, it is clearly right and proper that patients should spend as short a time as possible in hospital. The results to patients of long stay and neglect in Public Assistance institutions and hospitals are well known, and are responsible for the evil reputations of such institutions. As this geriatric unit, like most others, has grown up in what was once a municipal infirmary, it is satisfying to find that already the quick turnover has changed the attitude of prospective patients in the district. They are no longer hesitant about agreeing to admission, they no longer feel that their entry here will be the beginning of their "way to dusty death."

Attainment of a Quick Turnover

The way in which such a quick turnover can be achieved may be considered in three sections: domiciliary and outpatient treatment, ward treatment, and discharge from hospital.

DOMICILIARY AND OUTPATIENT TREATMENT

Every patient who requires early treatment to ensure his quick recovery must be admitted without delay. In order to select these cases, whenever a practitioner requests admission for a patient we see that patient in his own home or in the outpatient department. Most of them do not attend outpatients in the first instance: as a rule they have already taken to their beds, and so are seen in their homes. For every new patient attending the outpatient department, 4 are seen for the first time at home.

Great psychological benefit results to the patient from a visit by hospital doctors: he becomes at once an individual (rather than a mere name on a waiting-list), known personally to the doctors who will be looking after him in hospital. Many patients receive outpatient treatment in the physiotherapy and occupational therapy departments, and these are brought to hospital by car or ambulance.

Large-scale domiciliary treatment, as practised by Dr. Bluestone (1949) at the Montefiore Hospital, New York, would reduce still further the numbers requiring hospital admission, and lessen the period of stay for those already in hospital.

WARD TREATMENT

Various detailed articles on the adaptation of modern therapeutic measures to the care of the elderly sick have appeared (Howell 1950, Cosin 1949, Warren 1948a, Crockett and Exton-Smith 1950). The geriatric ward differs from the acute general ward in one important way. In the general ward, it is traditional for a patient to be in bed. Whatever the reason for his entry to hospital—be it merely the balancing of his diabetes, or the investigation of renal function—he is put to bed and kept there, for the convenience of doctors and to maintain, for the sake of the nursing staff, the orderly appearance of the ward. The diabetic accurately balanced for his immobile hospital existence will require, on returning to an active life, a radical change in his insulin dosage; but he will suffer no permanent harm. For the aged patient, on the other hand, such immobilisation is often disastrous, ending in permanent bedfastness.

Many of the reasons given for keeping patients in bed are not valid for the elderly. These reasons can be conveniently classified as medical, hygienic, and medico-legal, and reasons to do with expediency.

Medical Reasons for Rest in Bed

Heart-disease.—Rest in bed in a young patient considerably reduces the amount of work the heart has to do. On the other hand, in the aged patient, whose normal activity is already considerably reduced by other than cardiac factors, long-continued bed rest produces little further reduction in the work of the heart. Bain (1950) states that three weeks in bed after coronary thrombosis is quite long enough for an aged patient. Gavey (1949) agrees that three weeks is the optimum period of rest after coronary thrombosis; and in some cases a commode may be used after one week.

Patients with congestive cardiac failure or angina need not necessarily be kept in bed, but should be allowed as much activity as their dyspnœa or pain permits.

Hypertension.—Some degree of hypertension, especially systolic, is a usual concomitant of old age, and no patient need be restricted in his activity or confined to bed because of high sphygmomanometric readings alone.

Hemiplegia.—As soon as the period of shock following a cerebrovascular accident is over, the patient must become as active as possible. Generally a week after the onset of a hemiplegia, he may sit in a chair and start his exercises (Warren 1948b). Patients with hemiplegia are often left in bed for many months before their treatment is considered; by this time the limbs are contracted, stiff, and painful to a degree for which the paralysis alone cannot be blamed. Even when walking is never achieved the patient should be re-educated sufficiently to lead a "chair-borne" existence and not put back to bed as "hopeless."

Arthritis.—Even as little as 15° of limitation of extension of the knees, in the presence of restricted ankle movement, will prevent a patient walking; and such minor degrees of deformity easily develop insidiously beneath the bedclothes. A long period in bed only encourages stiff painful joint deformities. The resting of a joint with chronic arthritis may temporarily relieve pain, but any later attempt to recover function will bring with it more pain than ever before; so rest only alleviates pain at the expense of function.

Varicose ulcers.—Although varicose ulcers may be treated effectively by measures involving rest in bed, this is by no means essential. In fact, most patients with varicose ulcers need not be admitted to hospital at all. Treated at home by the Dickson Wright 'Elastoplast' method, they should remain ambulant (Rivlin 1951); and this is very desirable, for they are able to retain their independence, and do not become a burden to their relatives.

Neurological and orthopædic conditions.—Many such conditions may ultimately prevent patients walking—e.g., late motor-neurone disease, disseminated sclerosis, tabes dorsalis, and ununited fractures of the lower limb. For patients with such disorders rehabilitation will not be complete, but they should be encouraged to achieve as much functional activity as possible. They can usually be taught to get about in wheel-chairs, and thus live as full a life as possible within the limits of the disability. Moreover, deterioration may be slowed down, particularly in tabes.

Hygienic Reasons

It is an almost universal custom to keep an incontinent patient in bed. Conversely, one often finds that elderly patients confined to bed for long periods become incontinent. Very often the simple measure of getting such patients up suffices to remedy their incontinence. For those who remain incontinent when sitting out of bed there are two devices which prevent continuous soaking of their clothes. For men, the use of condom drainage is invaluable. A condom, from which rubber tubing leads to a bottle, is fitted over the penis, and in this way an intra-urethral catheter, and hence the danger of a urinary infection, are avoided. Women incontinent of urine (and of fæces) can be sat on a commode chair throughout the day, an inflated rubber ring being interposed to prevent pressure sores. Fæcal incontinence often responds to regular enemata, by means of which

bowel action can be produced at a convenient and predictable time.

Medicolegal Reasons

We have found that many patients have been kept in bed after a fall, irrespective of whether or not they have sustained any real injury. Some hospitals have been prompted to withhold attempts at rehabilitation of patients who have a tendency to fall for fear of adverse criticism in the coroner's court. A tendency to falling is almost universal in aged patients, but can hardly justify such a nihilistic attitude as that. In our unit 102 patients who were formerly bedridden now spend the greater part of the day sitting in chairs, or take part in walking exercises in the ward and gymnasium. Except one patient who slipped on the floor (which was formerly kept highly polished) none has sustained any serious injury.

Reasons of Expediency

It is always easier to keep aged patients in bed than to get them up, but the enthusiasm of the ward sisters in encouraging patients to activity does much to counteract such laissez-faire. Some believe, mostly out of sentiment, that people should be put to bed merely because they are old and "deserve a rest."

We have recently seen a lady of 91 who, after bronchopneumonia three years ago, had been kept in bed by well-meaning and consequently overburdened relatives. After two days in hospital she was sitting in a chair, and within six days she was walking. She was in hospital only twenty-nine days and was able to return home fully ambulant.

On the other hand, directly they are admitted to hospital, some patients who were ambulant at home lose their ability to get about. For those living alone the stimulus to remain active is that of self-preservation. There are many without friends and relatives, and to survive they must at least be able to get to their front door to admit food and succour. Once in hospital, such patients are often waited on hand and foot; the stimulus to activity is lost; they find no familiar pieces of furniture on which to drag themselves around; and they quickly cease to be mobile. Here is a true iatrogenic loss of locomotion.

Blind patients need not be kept in bed. If they are led round the ward each day they soon come to know it as well as the familiar surroundings of their own home.

DISCHARGE FROM HOSPITAL

Though it is a relatively simple matter to aid the recovery of the aged sick admitted to hospital, their ultimate discharge often presents a formidable problem. Naturally the rate of turnover directly depends on the ease with which the patients can be discharged. Those who have been treated successfully in hospital can either be returned home or be sent to hostel accommodation.

Return home.—The difficulty of discharging a patient to his home is due not only (as some would have it) to the unwillingness of relatives to look after their aged parents, but also to less obvious causes. As a person gets older he adapts his life to his failing faculties, and his daily habits in the home are modified to fit in with what he can manage without assistance. The sudden onset of an incapacity, be it major or minor, will upset the delicate balance between what the person can do and what he needs to do to continue his normal existence at home. This precarious balance, which has been steadily built up over the course of years, can rarely be restored once the patient has been admitted to hospital, even though the precipitating incapacity which led to admission has been removed. Where the balance before admission is not so critical, it is possible to discharge the patient to his home. Nevertheless, such patients will usually need a home-help, meals-on-wheels service, and outpatient supervision to enable them to carry on their home life successfully.

Hostel accommodation.—Where the balance between ability and necessity has become more precarious even the provision of these services will not allow the person to return home; and some form of hostel accommodation is essential. Hostels for the aged are sadly lacking in most areas. At the moment some 45% of the patients in this hospital have enough functional capacity to live fuller lives in a hostel than they are enjoying at present in hospital; but they remain because we lack other accommodation.

Long-stay annexes.—A few patients still have considerable disability even after months of intensive treatment. They need continued physical assistance and some general nursing care for their well-being. This type of patient is best cared for in the so-called long-stay annexe. In collaboration with the Emergency Bed Service we have been able to transfer such patients to nursing-homes under the control of the regional hospital board; and at the same time patients on the Emergency Bed Service waiting-list have been admitted to the vacant hospital beds.

Domiciliary Visits

We have already mentioned the part played by a domiciliary visit in promoting a quick turnover of patients. But there are also other aspects of these visits to be considered.

PURPOSE AND VALUE OF HOME VISITS

1. It is necessary *to establish a base-line*, or a common standard, by which to judge the urgency of the need for admission to hospital. The necessity arises from the present shortage of beds for the aged sick for we have to ensure that the available beds are used to the best advantage. If such a common standard is to be maintained a physician from the hospital must visit the patients in their own homes; otherwise the hospital has to rely on reports from general practitioners, who may have different standards and use different criteria in judging the urgency of admission.

Though adverse social conditions rather than physical disabilities sometimes make admission necessary, we find this exceptional. The initial visit must therefore be made by a doctor who assesses the physical need, rather than by an almoner who will assess the social need (cf. Macdonald 1950).

2. *To evaluate waiting-lists.*—We have received from time to time a list of patients on the "chronic" waiting-list of the Emergency Bed Service for the St. Pancras area. When we visited such patients we often found that the physical condition had changed since their names were put on the waiting-list; and in many cases the E.B.S. had not been informed of such changes. Thus some patients had died, others had already been admitted to a hospital, and many had recovered. The particular value of a domiciliary visit may be illustrated by the following case.

We were asked to see a woman aged 90, who was said to require urgent admission because of gangrene of the leg. She was living in reasonable comfort in a first-floor flat and was cared for by an elderly friend. On examination she was very weak, but not in pain. There was auricular fibrillation and the left leg was blue and cold up to the groin, with no femoral pulse. She did not want to come into hospital and the friend, who realised that she was dying, was most anxious that she should spend her last hours at home. It seemed the kindest thing for them both to leave them be, for the friend was managing adequately and the patient was receiving attention from the district nurse. We consulted with the patient's doctor who agreed to this course.

3. *To assess the patient in his environment.*—It is becoming clearer and clearer that by observing and treating a patient in a hospital, isolated from his normal environment, we may be going only half way towards promoting recovery in its broadest sense. The hospital

doctor visiting the patient's home before admitting him to hospital will at once gain valuable information on which the whole treatment, course, and prognosis may be planned. It is possible to see how the patient was managing to cope with his everyday life before his illness, or, in some cases, despite his illness. Further, the relatives and others helping the patient will nearly always be at hand, and all the circumstances of the case can be discussed with them. The relatives must never be given the impression that "granny is going away for good"; the idea should be inculcated that the stay in hospital is only likely to be temporary, so that granny's room is not given up the moment she goes out of it. Also the strain the illness is throwing on those helping can be judged. This is an important point in assessing the necessity for admission. Incontinence, bed-sores, and restless confusion at night are all conditions imposing on the relatives a nursing burden that very few can support.

Finally, it is useful from the standpoint of prognosis to know the details of the patient's home—the number of stairs, the situation of water and lavatory, the proximity of shops, and the willingness of relatives to help. On these facts one may often predict whether the patient will be able to return home once hospital treatment is finished.

4. *To make contact with general practitioners.*—Whereas formerly the plight of many old people was brought to our notice by such bodies as the Family Welfare Association, we now find that general practitioners seek our help in the first instance. The general practitioner is, we hope, reassured to feel that he is not having to deal unaided with his aged sick, who are often among his most exacting patients. By discussion with him the patient's management can be unified, and the usual dichotomy between home care and hospital care avoided. Moreover, the bond between the general practitioner and his local hospital, which is rapidly weakening elsewhere, is in this particular service strengthened.

RESULTS OF HOME VISITS

The following figures show the care arranged as a result of 127 domiciliary visits between June 1, 1949, and May 31, 1950.

The condition of some of these patients was investigated because they had been on the E.B.S. "chronic" waiting-list for some time. When the visits were made a few were found to have been admitted elsewhere or to have died.

Disposal	*No. of patients*
Admitted immediately to St. Pancras Hospital	35
Admitted subsequently to St. Pancras Hospital	20
Awaiting admission to St. Pancras Hospital	4
Admitted elsewhere	18
Admitted elsewhere by our arrangement	5
Outpatient and domiciliary treatment	21
Nothing needed	11
Died	10
Refused treatment	3
Total	127

We do not intend, in this paper, to analyse these results at any length. Two interesting points, however, may be mentioned. Of the 55 patients admitted after being seen in their homes, 7 had conditions which we think might have been prevented by earlier medical treatment at home. If these 7 patients had seen a doctor earlier they would not have reached the state of neglect which finally necessitated their admission to hospital. Moreover, a further 9 patients need not have come into hospital if better social services—such as the provision of night sitters-in, more domestic help, and a laundry service—had been available. Another 4 patients were admitted while aged relatives on whom they were dependent were themselves undergoing hospital treatment. We should also like to emphasise that in no case was a patient's admission to hospital refused when his medical condition was so serious as to demand it.

Further Development of the Service

In order to prevent such states of affairs, and to improve the geriatric service, Dr. D. H. Geffen, medical officer of health of the borough, has started a St. Pancras Association for the Care of the Aged. A club for old people has also been formed, which a doctor from the hospital is to attend, so that those who seek medical advice can readily obtain it. Welfare workers will visit old people who are incapacitated in their homes, especially those living alone. At the same time there will be a close link with the geriatric outpatient department and the outpatient services of the hospital. These measures, it is hoped, will ensure that the plight of many old people will become known to the medical authorities earlier; and granny will not be found to have "gone" while waiting for a hospital bed to be found for her.

We wish to acknowledge with gratitude the coöperation we have received in our work from Dr. D. H. Geffen, and from Major F. Hannan of the Emergency Bed Service.

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MORTALITY FROM CIRCULATORY DISEASES IN NORWAY 1940–1945

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IN recent decades the proportion of deaths attributed to diseases of the circulatory system has increased greatly, and in civilised communities this group of diseases is now the most important cause of death. Some of this increase is certainly more apparent than real, owing to the greater average length of life, more attendance on doctors, and more accurate diagnosis; and there may have been some shift in diagnoses from other groups to the circulatory group (Moriyama 1948, Woolsey and Moriyama 1948). But the possibility that there may also be a true rise in the mortality from this group of diseases, and notably from diseases of the coronary arteries, cannot be dismissed.

One explanation of the supposed increase in prevalence of these diseases is that this is connected with an increased consumption of foods containing fats and cholesterol. If this is proved correct, ideas both on treatment and on the composition of an optimal dietary will be profoundly affected.

SCOPE OF INVESTIGATION

During the late war national dietaries were greatly changed in most European countries occupied by the enemy. Food became scarce, and the shortage was primarily of foods containing fat and cholesterol. At the same time there was increased nervous strain, which has also been held to provoke circulatory diseases. In view of these facts we have investigated the mortality

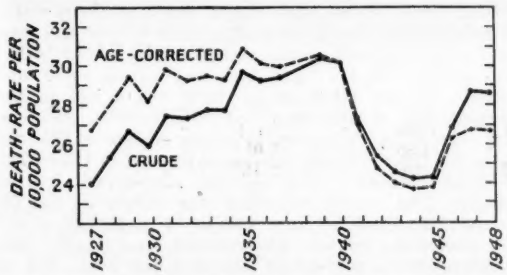

Fig. 1—Mortality from circulatory diseases in Norway in 1927-48. Standard population = population of Norway in 1940.

from these diseases in Norway in the period 1927–48. 1927 was chosen as the first year to be studied because it was then that Norway adopted the inter-Scandinavian nomenclature of causes of death. However, in 1941 the Statistical Central Bureau, which handles the figures for causes of death, adopted the international nomenclature. It has therefore been necessary to regroup the diagnoses of causes of death for the years 1941–48 so that they tally as closely as possible with the diagnoses according to the inter-Scandinavian nomenclature; this regrouping was made in accordance with directions given by the Statistical Central Bureau. Table I shows the synonymous diagnoses of the two nomenclatures.

MORTALITY FIGURES

Fig. 1 shows that until 1940 there was a steady rise in mortality from circulatory diseases. This rise was smaller with correction for age than without such correction—a feature which reflects the influence of the changing age-distribution of the community. From 1941 onwards there was a sharp fall in mortality, which was lowest in 1943–45. When the war ended mortality rose sharply. The rise before the war, the decline during the war, and the subsequent rise are equally pronounced for each sex. Expressing the mortality in 1938–40 as 100 (with correction for age), the comparable figure for 1943–45 was 78·7 for men and 78·6 for women, and for 1946–48 it was 87·3 for men and 88·1 for women.

This decline began in the year that the inter-Scandinavian nomenclature was replaced by the international nomenclature. We have concluded, however, that the change-over can account for no more than a small part of the war-time decline; and the subsequent rapid rise to the pre-war level strongly suggests that the decline was real.

Throughout the period from 1927 to 1948 the mortality from these diseases was highest in the oldest age-groups. Before the war the increase in mortality was confined to those over 60 years of age, and was greatest among those aged 80 years or more. The decline during the war affected all age-groups, but was greatest in the youngest groups. Expressing mortality in 1938–40 as 100, then in 1943–45 it was 69 among those aged 20–39 years, 71 in those aged 40–59 years, 75 in those aged 60–79 years, and 89 in those aged 80 years or more (table II). The post-war rise involved all ages over 40.

In estimating the number of deaths from each separate cause between 1927 and 1948, we are hampered by the big changes during this time both in diagnostic criteria and in the system of statistical registration; and thus we must be most cautious in drawing conclusions. Throughout the period, however, there were four main causes of death according to the inter-Scandinavian nomenclature: apoplexy, arteriosclerosis, chronic myocarditis, and chronic endocarditis (valvular disease of the heart). Chronic nephritis was a rather less important cause; and the other causes, both individually and collectively, played a minor part.

During the whole period, apoplexy was the most important cause. The mortality from this cause rose somewhat before the war, but only among those aged 80 years or more. During the war there was a distinct, but not very well-marked, decline for all age-groups, and this was most evident in the youngest groups (see table II). Since the war there has been a definite rise in all age-groups.

Arteriosclerosis was for a long time the next most common cause; but from the middle 30s deaths from this cause declined considerably (fig. 2). The decline was certainly not due to this disease having become more rare; it is attributable rather to the change in nomenclature, the main effect of which was an increase in notifications of death from chronic myocarditis, under which heading cardiac infarction is now registered (see table I). The decline in mortality from arteriosclerosis was accentuated during the war; but since then deaths from this cause have definitely increased.

The greatest rise was in deaths from chronic myocarditis, the rise being most prominent in the oldest age-group (fig. 3). However, deaths from this cause also declined during the war, and after the war again rose.

It is more difficult to judge mortality from chronic endocarditis because since 1941 this cause has been included with "other diseases of the heart." The figures from 1941 onwards are therefore misleadingly high (table II).

The most striking features of the chronic-nephritis figures (table II) are the conspicuous decline during the war and the comparatively moderate rise after the war.

TABLE I—CAUSES OF DEATH ACCORDING TO THE INTERNATIONAL AND THE INTER-SCANDINAVIAN NOMENCLATURES

International	Inter-Scandinavian
Pericarditis Endocarditis acuta et subacuta Endocarditis chronica (vitium organicum cordis). Alii morbi cordis	Pericarditis Endocarditis acuta Endocarditis chronica (vitium cordis)
Myocarditis acuta et chronica, degeneratio myocardii, infarctum cordis	Myocarditis chronica
Arteriosclerosis universalis. Arteriosclerosis cordis, embolia, thrombosis, aneurysma arteriæ coronariæ, angina pectoris	Arteriosclerosis
Embolia et thrombosis cerebri. Congestio pulmonum, œdema, embolia, infarctum, thrombosis pulmonum	Embolia
Aneurysma (sine aorta)	Aneurysma (sine aorta)
Gangræna	Gangræna senilis
Morbi venarum	Morbi venarum
Alii morbi organ. circulat.	Alii morbi organ. circulat.
Hæmorrhagia cerebri, apoplexia	Apoplexia
Nephritis chronica	Nephritis chronica

TABLE II—MORTALITY IN 1943–45(a) AND 1946–48(b) RELATED TO MORTALITY IN 1938–40 WHICH IS EXPRESSED AS 100

Causes of death	Age-groups (years) 20–39		40–59		60–79		80 and over		All ages	
	a	b	a	b	a	b	a	b	a	b
Apoplexy	..	..	67	73	80	89	96	102	85	95
Arteriosclerosis	..	..	57	71	52	57	61	65	60	65
Chronic myocarditis	..	..	86	100	83	104	104	112	92	112
Chronic endocarditis	75	75	92	105	98	126	151	191	112	143
Chronic nephritis	50	50	47	43	51	46	50	41	50	46
All causes	69	58	71	77	75	88	89	97	81	93

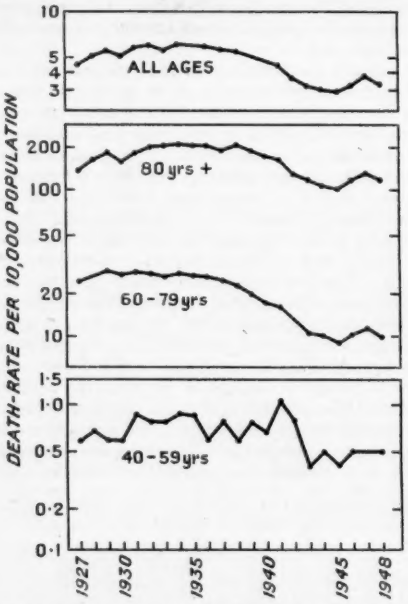

Fig. 2—Mortality from arteriosclerosis in Norway in 1927-48, by age-groups.

The following conclusions can be drawn :

1. During the war one or more factors brought about a definite decline in mortality from diseases of the circulatory system in Norway. These factors have in the main not operated since the war, and mortality has again risen.
2. These factors affected all the most important causes of death from circulatory diseases, for both sexes and every age-group.

CHANGES IN DIET

It is natural to seek a solution in the dietary changes, which began before mortality from circulatory diseases started to decline. Comparison of the dietaries of working-class families in Oslo before and during the war (Strøm 1948) shows that during the war there was a considerable decline in the consumption of meat and meat products, whole milk, cream, margarine and other fats (but not butter), cheese, eggs, fruit and berries, sugar, and coffee. On the other hand, there was a rise in the consumption of fish, skimmed milk, cereals, potatoes, and vegetables. The average calorie content of the food eaten fell from 3470 per man value per day in 1936–37 to 2850 in 1942–45. This led to widespread loss of weight. The calorie reduction was chiefly in the fat component, which fell from 159 to 71 g. per day ; and the cholesterol content was reduced accordingly. The average protein content of the diet fell from 115 to 93 g. per day, while the consumption of carbohydrates rose from 395 to 429 g.

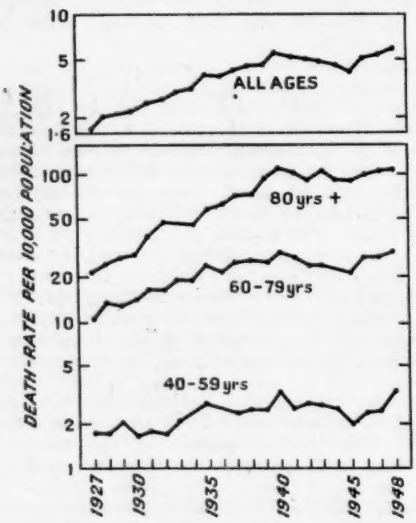

Fig. 3—Mortality from chronic myocarditis in Norway in 1927-48, by age-groups.

We have obtained from the ministry of supplies data on the estimated annual consumption between 1938 and 1948 of the main sources of cholesterol—milk, cream, butter, cheese, and eggs. These figures are approximate ; but, as fig. 4 shows, there is close correlation between the curve for consumption of fat contained in these foods and the curve for mortality from circulatory diseases, with correction for age. We must, however, beware of regarding this evidence as decisive. Similar correlation could undoubtedly be demonstrated between mortality and trends in other commodities, such as sugar, coffee, tobacco, textiles, and footwear ; yet the last two of these can hardly have exerted any influence on mortality.

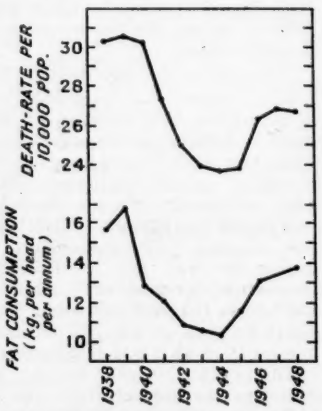

Fig. 4—Mortality from circulatory diseases, corrected for age ; consumption of fat in form of butter, milk, cheese, and eggs.

TOWN AND COUNTRY

If the changes in the dietary account for the lessened mortality, the decline should be greater in urban than in rural areas. The food restrictions, though applying throughout the country, made themselves felt most in the towns. Indeed, in some rural areas the diet of the population improved during the war, because the farmers consumed more of their own produce.

To our surprise we found that the mortality declined just as much in the rural as in the urban areas. In the period 1938–40 the mortality in the urban areas was 33·5 per 10,000 population, while in the rural areas 28·6. The corresponding figures for 1943–45 were 26·9 and 23·3. Expressing mortality in 1938–40 as 100, in 1943–45 it was 80·3 in the urban areas and 81·5 in the rural areas—an insignificant difference between the two areas.

However, comparison of the behaviour of each cause of death in town and in country gives a different result. Table III shows that mortality from apoplexy declined somewhat less in the urban than in the rural areas, while mortality from chronic nephritis declined about equally in the two areas ; but mortality from arteriosclerosis and chronic myocarditis (combined because of the change in nomenclature) fell much more in town than in country. Expressing the mortality from these two diseases in 1938–40 as 100, in 1943–45 it was 69·4 in the urban areas and 77·7 in the rural areas. It is precisely these diseases that might decrease most with reduction in the supply of fats and cholesterol.

TABLE III—MORTALITY FROM APOPLEXY, CHRONIC NEPHRITIS, AND ARTERIOSCLEROSIS PLUS CHRONIC MYOCARDITIS, IN URBAN AND RURAL AREAS IN 1938–40 AND 1943–45

Areas	Apoplexy		Chronic nephritis		Arterio-sclerosis plus chronic myocarditis	
	1938–40	1943–45	1938–40	1943–45	1938–40	1943–45
Urban :						
No. of deaths	2771	2467	693	351	2876	2042
Deaths per 10,000 pop. per year..	11·1	9·6	2·8	1·4	11·5	7·8
Relative mortality ..	100·0	87·1	100·0	50·0	100·0	69·4
Rural :						
No. of deaths	6171	5437	1402	768	6225	5039
Deaths per 10,000 pop. per year ..	9·8	8·3	2·2	1·2	9·9	7·7
Relative mortality ..	100·0	84·6	100·0	52·5	100·0	77·7

Lacking data on the sex and age distribution of the population in urban and rural areas, we have been obliged to limit our further comparisons to Oslo on the one hand and the whole of Norway on the other. In Oslo before the war, the adjustment of the dietary to modern standards, with a plentiful supply of "protective" foods, was fairly far advanced; and the war-time food restrictions were more severe in this city than in the country as a whole. Table IV shows that, for both sexes and for all ages combined, the decline was somewhat *smaller* in Oslo than in the whole country. This is not in keeping with the hypothesis that food restrictions lessened mortality; but close study of the table shows that the comparatively small decline in Oslo was chiefly among women aged 80 and over. Among younger women and among men in all age-groups, the decline was greater in Oslo than in the whole country, and we are tempted to ask: Was not the factor responsible for the decline in mortality really more effective in Oslo than in the country as a whole, this feature being obscured by more accurate diagnoses in Oslo during the later years in the case of the oldest women?

Comparing the causes of death, one by one, we find that the mortality from apoplexy and chronic nephritis declined somewhat less in Oslo than in the whole country, whereas mortality from arteriosclerosis plus chronic myocarditis declined almost equally in the two areas. However, under the age of 80 the decline in mortality from arteriosclerosis and myocarditis was greater in Oslo than in all Norway. Here again, the over-80 age-group forces up the total figure for Oslo, and we must again ask whether more accurate diagnosis in this age-group during the later years did not play a part, camouflaging a decline.

TABLE IV—MORTALITY FROM CIRCULATORY DISEASES IN ALL NORWAY AND IN OSLO IN 1943–45, RELATED TO MORTALITY IN 1938–40 WHICH IS EXPRESSED AS 100

Age (yr.)	Men		Women		Both sexes	
	All Norway	Oslo	All Norway	Oslo	All Norway	Oslo
40–59	80·9	68·1	73·0	54·7	76·2	63·1
60–79	77·6	66·8	75·7	76·5	76·9	72·1
80 + ...	87·8	85·0	91·3	107·3	88·9	99·5
All ages :						
Direct calculation ..	83·3	81·1	83·8	90·4	83·4	86·5
Standardised calculation	78·7	75·4	78·6	84·5	78·6	81·1

The standard population is that of Norway in 1940. The "direct calculation" is computed from crude death-rates, and the "standardised calculation" from the standardised death-rates.

CONCLUSION

More definite conclusions are impossible. Our investigations have yielded, not certain proof, but several pieces of evidence for the dietary hypothesis. We have, moreover, been unable to find an alternative explanation of this remarkable decline.

SUMMARY

Before the late war mortality from diseases of the circulatory system was rising each year in Norway. This rise ceased during the war, and from 1941 to 1943–45 there was a well-marked fall in mortality from these diseases. Since the war there has been a rapid rise in mortality towards the pre-war level.

The war-time decline in mortality was equally evident for both sexes and all ages; and it involved all the most important causes of death from circulatory diseases. This also applies to the post-war rise.

The war-time decline coincided with severe dietary restrictions. The supply of calories was reduced, and this reduction was principally of foods containing fat, including those rich in cholesterol.

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LATERALLY PLACED CERVICAL DISCS

REVIEW OF TWELVE CASES

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Stookey (1928) drew attention to certain syndromes resulting from pressure on the spinal cord or its attached roots by nodular tumours taking origin from the intervertebral discs in the cervical region. These tumours, which he believed were neoplastic, he designated ventral extradural chondromas. Arising usually in or near the midline they impinged on the cord from its anterior surface, thereby dislocating it backwards. The clinical picture was commonly one of total cord compression, though at times it resembled that of the Brown-Séquard syndrome. Very rarely the tumour might be placed so far laterally as to damage nerve-roots while leaving the cord unharmed.

Earlier workers had described such tumours under different titles, such as chondromata, fibrochondromata, osteochondromata, enchondromata, chondrochordomata, and so on. For example, Gowers (1886), discussing compression of the spinal cord, refers to enchondroma "springing from the bones or intervertebral tissues" as a possible cause, and Oppenheim (1911) mentions just such a case, in which a spinal chondroma had been removed during life. More recently Elsberg (1916, 1925) and Adson (1925) reported finding a chondroma at exploratory operation in cases believed to be due to intrinsic spinal neoplasms.

Following Stookey's (1928) paper, other reports soon began to appear. Elsberg (1931) stated that he had found ventral extradural chondromata in 15 cases out of 200 explored for spinal tumour. He drew attention to the important work of Schmorl (1929) and Andrae (1929) on the pathological anatomy of the intervertebral discs, and commented on the close histological resemblance between the ventral chondromata and intervertebral discs. He felt nevertheless that there was not a complete identity, for the former showed unmistakable hyperplasia and in that sense were to be regarded as neoplasms, though of admittedly limited activity. Bucy (1930) and Alpers et al. (1933) had also taken them to be true neoplasms, but it shortly came to be widely accepted

that they represented simple protrusions or herniations of intervertebral disc through the damaged annulus fibrosus (as Schmorl and Andrae had proposed), and that these were by no means rare (Mixter and Barr 1934, Peet and Echols 1934, Mixter and Ayer 1935, Hawk 1936, Browder and Watson 1945).

For some years after the general recognition of these facts it was still held, as Stookey had originally asserted, that the clinical picture presented by ruptured cervical discs almost invariably suggested spinal neoplasm, and that symptoms of root compression alone were rare (Love and Walsh 1938, 1940, Stookey 1940, Bradford and Spurling 1941). Semmes and Murphey (1943), contributing 4 cases of their own with purely radicular symptoms, indicated that they had only been able to find 4 similar published cases. Since then, however, many workers have described isolated root injury due to laterally placed cervical disc herniations (Spurling and Scoville 1944, Michelsen and Mixter 1944, Bucy and Chenault 1944, Elliott and Kremer 1945, Michelsen 1947, Kristoff and Odom 1947, Keegan 1947, Semmes 1948). There is now plentiful evidence that lateral rupture is in fact more, rather than less, common than central protrusion, and that brachial neuralgia of radicular type is accordingly more usually encountered than the syndromes of spinal-cord compression.

MATERIAL

This survey is based on the study of 12 patients who had cervical nerve-root disturbances due to ruptured disc and were admitted to the Queen Elizabeth Hospital under the care of Prof. P. C. P. Cloake in three and a half years ending in June, 1949. I have recently followed their progress since discharge from hospital. The diagnosis was proved at operation in 4 cases, confirmed myelographically in 2 other cases, and made on clinical grounds alone in the remaining 6. 6 patients were women and 6 men. Their age on admission was 40–55. The average duration of their symptoms was about eight months, the extremes being eight days and about two years. In only 1 patient was there a history of frank injury to the neck at any time in the past; it had preceded the onset of his symptoms by several years. Pain was unilateral in 11 cases; it was referred to the right arm in 5 cases, and to the left in 6. In 1 case it was bilateral, but very much more severe on the left side. There was no evidence of sex differentiation in the arm affected, and handedness did not seem to be significant. The nerve-root involved was C7 alone in 7 cases, and C6 alone in 4 cases; and in the 1 patient with a lesion of D1, there was simultaneous compression of C7 by a second disc. 1 other patient also showed myelographic evidence of a double disc lesion (at C3–4 and at C6–7), but the upper herniation was clinically silent, and he has therefore been included in the group of seventh-root compression alone. Lumbar puncture was done in 11 patients, and the pressure of the cerebrospinal fluid (C.S.F.) found to be normal. A raised C.S.F.-protein level (65 and 70 mg. per 100 ml.) was found in 2 cases, but in the remaining 10 cases it was normal (up to 45 mg. per 100 ml.).

TREATMENT

Conservative measures were adopted in most cases. Immobilisation of the neck by a plaster collar for 6–8 weeks was usual. In all cases so treated, pain and other symptoms were rapidly relieved. Cure remained permanent on removal of the cast, except in 1 patient, who suffered an immediate partial recrudescence of his complaints; radiant heat and graduated physical exercises for two months proved ultimately effective. 1 patient was already making a spontaneous recovery on admission to hospital; rest in bed quickly completed his cure. 1 other patient, who had an undoubted long-standing C7 syndrome, was discovered to have complicating addisonian anæmia. Rest, analgesics, and specific anti-anæmic treatment produced a swift subsidence of her right-sided brachial neuralgia, which has not recurred, although nine months after discharge from hospital the right triceps-jerk still remains depressed. 4 patients were submitted to operation, of whom 3 made excellent recoveries; the 4th, whose left C6 root was compressed by an entremely large disc herniation, which was successfully removed, developed postoperatively signs of damage to the spinal cord. Although her brachial neuralgia has been completely relieved and the signs of damage to the cord have somewhat regressed, she still has, a year after operation, a fairly pronounced disability.

ILLUSTRATIVE CASES

Case 1.—A farmer's wife, aged 44, was admitted to hospital on Dec. 3, 1947, with six months' history of pain in the left shoulder, pectoral region, and upper arm, with tingling paræsthesia in the index and middle fingers of her left hand and in the pre-axial border of the forearm. Her symptoms had at first been intermittent but had finally become constant and very severe. There was no history of trauma, pain, or stiffness of the neck. There was nothing relevant in her past medical history.

On examination the neck movements were of full range without pain. There were loss of tone and some weakness in left triceps, slight loss of bulk in left forearm, and weakness of wrist extensors. The left triceps-jerk was absent. Sensory acuity was diminished within distribution of C7 root. No other physical signs were found.

Radiography showed arthritis of C5–7 vertebræ, with some diminution of interposed disc spaces.

Lumbar puncture produced C.S.F. under normal pressure and contained protein 35 mg. per 100 ml.

Laminectomy revealed that the left C7 root was tightly stretched over an extremely large disc protrusion arising laterally from C6–7 interspace. This was removed piecemeal. For a few days postoperatively the symptoms were as bad as, or worse than, ever but gradually subsided thereafter.

Follow-up.—Re-examined on Jan. 17, 1950, the patient said it was three or four months after operation before she felt she had made a really substantial recovery. Since then there had been no pain in her arm, and her only remaining symptom was that the tips of her left index and to a less extent of her middle finger still felt "not exactly numb, but not exactly right." There was still a little diffuse thinning of the left forearm and upper arm; and, although there was no muscular weakness or demonstrable sensory loss, the left triceps-jerk was absent.

This patient's history and physical signs are typical of C7-root involvement. She made a good though rather slow recovery after removal of the disc herniation, and two years later is virtually symptom-free. The absent reflex and the persisting slight subjective dysæsthesia indicate radicular damage which is in all probability irreversible.

Case 2.—A business man, aged 43, was admitted on Oct. 30, 1947, complaining of tingling, numbness and pain initially limited to the middle finger of his right hand, which had spread subsequently up the middle of his forearm on both palmar and dorsal aspects, and slightly into the upper arm. He had noticed slight weakness of his right hand and wrist. Pain and paræsthesiæ were most marked when he was lying down at night, and interfered with his sleep, but were not so evident when he was up and about. His symptoms had lasted about two months on admission. There was no history of injury, pain, or stiffness of the neck.

On examination there was slight limitation of rotation of the neck to the left; slight weakness of the grip of the right hand and of movements at the wrist, with very slight blunting of pinprick on the palmar surface of the middle three digits of the right hand. No reflex changes were found in the right arm. No other physical abnormalities were found. The C.S.F. was under normal pressure, and contained protein 35 mg. per 100 ml.

Radiography showed C6–7 interspace a little narrow; at myelography the 'Lipiodol' column indented on the right side at this level.

Treatment was conservative with a plaster collar for six weeks.

Follow-up.—Re-examined on March 1, 1950, the patient said the plaster case had given him immediate relief, and cure had persisted after its removal. In the last two years he had often indulged in a day's rough-shooting without feeling any symptoms, but had tried to avoid any heavy lifting.

Again a typical case of C7-root involvement, confirmed myelographically. The absence of reflex change is probably explained by the fact that the triceps-jerk receives its major innervation from the C6 or D1 roots, rather than from C7. The cure by conservative means has been complete and lasting.

Case 3.—A married housewife, aged 40, was admitted on March 8, 1949. Ten months before she had suddenly developed pain "like being pulled in a torture rack" from the right deltoid region down the lateral aspect of the upper arm to the elbow. From the elbow to the wrist, in the radial part of the forearm, she had had recurrent "spasms like electricity." The tips of all the fingers of the right hand were constantly tingling, and in addition the thumb and index finger felt numb. Her symptoms had slowly become worse, and the hand clumsy and weak; and a little before admission she had accidentally burnt the extensor aspect of her right forearm without knowing it until afterwards. There was no history of injury to her neck.

On examination her neck movements were full. There was some generalised weakness of the whole right upper limb, and all its deep reflexes were reduced, especially the triceps-jerk. There was diffuse sensory impairment in the right hand, forearm, and upper arm. The only other abnormal physical finding was increased sweating in the right hand.

Lumbar puncture produced C.S.F. under normal pressure and contained protein 45 mg. per 100 ml.

Radiography showed narrowing of C5–6 and C6–7 interspaces; myelography confirmed rupture of the disc laterally.

Laminectomy disclosed compression of the right C6 nerve-root by protrusion of C5–6 disc, which was ablated.

Follow-up.—When re-examined on Feb. 9, 1950, the patient said that her pain had been immediately cured by operation and had not returned. Within a few days she had lost the tingling in her finger-tips, but numbness had persisted in her thumb and index finger for several months before finally vanishing. There were no motor or sensory signs; and, though the right triceps-jerk was still considerably reduced, the biceps and supinator reflexes had returned to normal.

There are several unusually instructive points about this case. Diffuse functional motor and sensory findings before operation effectively disguised any underlying radicular defects that may have been present, but the pain in the deltoid muscle and lateral aspect of the upper arm, with paræsthesiæ in the extensor part of the forearm and numbness in the thumb and index finger, strongly suggested an affection of C6 root. The depression of biceps, supinator, and triceps jerks is interesting and (in my opinion) rather characteristic of involvement of C6 root, for this radicle contributes to the reflex arcs of all three muscles. The tingling in all the finger-tips, in addition to the numbness in thumb and index, is not uncommon in radicular brachial neuralgias. As Spurling and Scoville (1944) pointed out, it cannot be explained by irritation of a single root; they believed that it was produced by secondary scalene spasm, itself the result of arm pain, leading to the production of an epiphenomenal thoracic-inlet syndrome. That such was the explanation in this woman's case seems likely from the fact that the generalised digital tingling and the hyperidrosis of the hand disappeared within a few days after operation, whereas the radicular numbness in her thumb and index finger lasted for some months. It may be supposed that, as soon as the pain was abolished in her arm (which happened immediately after the operation), the scalene spasm more gradually relaxed, with consequent relief of the disturbance of neural and/or vascular structures at the root of the neck.

DISCUSSION

In the 12 cases under review signs of damage to C7 root occurred almost twice as often as signs of damage to C6 root. D1 root was only once affected, and there were no unequivocal examples of injury to the higher cervical nerves by disc herniation. These findings are in essential conformity with the published experience of other workers. The explanation of the greater frequency of protrusions in the lower cervical spine is generally taken to be that the discs at the lower interspaces are more exposed to repeated minor traumata, as a consequence of the much greater mobility of this part, compared with the upper portion of the neck.

Diagnosis

Three common radicular syndromes can often be distinguished on clinical grounds fairly accurately. The differentiation naturally depends on the whole constellation of symptoms and signs, but a fairly reliable guide is provided by the distribution of the arm pain (which seldom extends below the wrist to invade hand or fingers) and of the distal paræsthesiæ, both of which distributions can usually be easily established. If some allowance is made for individual variation, certain patterns are found to be frequently recurring. Thus, when C6 radicle is affected, pain is referred to the antero-lateral aspect of the upper arm and to the extensor aspect of the forearm; the thumb and index finger are the seat of tingling or numbness. With a lesion of C7 root, the pain is posterolateral in the upper arm, and though it usually occupies the radial border of the forearm (as with a lesion of C6) at times it may be referred to the midline segment (compare cases 1 and 2). Paræsthesiæ centre on the middle and index finger, with occasional overflow, into the thumb or rarely into the ring finger. In affliction of D1 root the pain is felt in the back of the upper arm and in the ulnar side of the forearm, and the little and ring fingers are paræsthetic. Pain in the shoulder region is common in all three of these root syndromes; it may be situated in the upper trapezius muscle, in the supraspinous region, along the vertebral border of the scapula, at the scapular tip, or over the blade of the scapula. It may also be felt in the pectoral muscles or in the posterior muscles of the neck. The localising significance of the various sites is not very clear, except for pain in the pectoral region, which is most often encountered with irritation of C7 root.

So far as motor signs are concerned, slight selective wasting of muscles or a flabby toneless feeling on palpation may be recognisable. Selective weakness of muscle-groups according to their segmental supply can quite commonly be distinguished; for example, with compression of C7 root a little weakness of elbow, wrist, and finger extensors is characteristic. At times, however, radicular paresis cannot be made out, being masked by more diffuse weakness of functional origin, which is determined by aggravation of pain in the limb on attempting forceful movement with it. With reference to sensory findings, Foerster's (1933) dictum, that even complete destruction of a single sensory root produces no objective disturbance, because of overlapping innervation from adjacent rootlets, has been generally accepted by clinicians. This assertion probably needs modification, for there is no doubt that in some cases mild cutaneous loss in a part, or very occasionally the whole, of a dermatome distribution can be demonstrated. Keegan (1947) has gone so far as to claim that radicular loss can always be shown, if searched for carefully enough, and that its pattern is remarkably unvarying. It must be borne in mind, however, that, if the examiner has a preconceived notion of the root involved, either from points in the history or from the discovery of certain motor or reflex changes, and a fixed idea of the limits of that particular root territory, it is relatively easy to discover suggested

defects that seem only the more genuine by conforming to the expected boundaries. In my opinion sensory changes are almost always restricted to a slight diminution of acuity of pinprick and two-point discrimination on the palmar surface only of the digital phalanges, which are the seat of subjective dysæsthesia; the rest of the dermatome area appears normal with ordinary clinical tests. As regards the arm reflexes there is so much personal variety in their major segmental innervation that again no absolute constancy is found. It is undoubtedly true that depression or abolition of the triceps-jerk most often indicates a lesion of C7 root, and that the supinator and biceps jerks are impaired with lesions of C6 root. However, the triceps reflex can be implicated at times with affections of either C6 or D1 rootlets; conversely, the supinator and the biceps reflexes may be altered by lesions of the C7 root.

Straight radiography of the cervical spine in patients with radicular neuralgic complaints is not always helpful or reliable. Many apparently normal people over the age of 40 show radiological proof of degenerative arthritis in the neck (Davies 1945). These changes are usually most evident in the lower cervical spine, commonly from the level of C5 vertebral body downwards. There is narrowing, often considerable, of the intervertebral disc (as seen in the lateral projection) at one or more of the interspaces C5–6, C6–7, and C7–D1; and the margins of the vertebral bodies adjacent to the affected space show sclerosis, with or without osteophytes. Alternatively, in some cases the proliferative marginal changes are very pronounced, while loss of disc space is minimal or even absent. In either group, however, the radiological appearances strongly suggest a pathological state of the relevant intervertebral discs. The fact that the patients are symptom-free is simply confirmation in the living of Schmorl's necropsy demonstration of the frequency of symptomless rupture of an intervertebral disc. Conversely it is well known that the absence of radiological signs in the neck cannot be taken to mean that the intervertebral discs are healthy (Hanflig 1936, Spurling and Scoville 1944, Davies 1945). It follows that hypertrophic changes, even when associated with the grossest reduction of an interspace, in a patient with symptoms of segmental brachial neuralgia may be merely coincidental and do not necessarily define the level of the protrusion. In the present cases 2 patients gave normal cervical radiograms; yet 1 of these was proved at operation to have a large disc protrusion at C5–6, and the other had clinical signs of prolapse at C6–7. Of the 10 remaining patients 7 had abnormalities at a single interspace, and 3 at two interspaces; in only 6 did the radiological signs coincide exactly with the level of root compression as determined clinically, myelographically, or operatively.

Treatment

That effective treatment of segmental arm pain due to prolapsed disc is possible by simple measures is widely recognised but has recently been a little obscured by the flood of papers on its surgical cure. The most generally useful method of treatment is plaster immobilisation of the neck, the cast being designed to include the head and upper chest to ensure really strict immobilisation. Symptoms are almost invariably relieved by this procedure, sometimes with the most gratifying speed. In the present series of cases only 1 patient had a partial relapse after removal of the collar. Although he then did well with physiotherapy, such cases are often best treated by the provision of a leather collar which can be worn indefinitely. Sling traction of the neck by Sayre's method has its advocates (Turner and Oppenheimer 1936, Hanflig 1943), but it means that the patient must be kept in bed lying on his back, whereas the patient in plaster can be fully ambulant and need not even remain in hospital. Physiotherapy, in the form of massage, radiant heat, or diathermy with active graduated physical exercises, has a definite place in treatment where symptoms are not severe.

Operation should properly be reserved for those whose symptoms are of long duration and are known to resist more modest courses of action. In this context, however, it may be recalled that the morbid anatomy of protruded cervical disc often differs in some respects from that of protruded lumbar disc. The lumbar nerve-roots are usually injured by herniations of more or less discrete disc substance, whereas in the neck this is seldom so. More often, as Elsberg emphasised long ago, there is an accompanying bony and fibrocartilaginous proliferation, arising from the margins of the vertebral bodies and from the annulus fibrosus, which may be the major element in causing stretching or compression of the nerve-root. From the surgical point of view it can be far more difficult, technically, to remove such a secondary tumefaction adequately, than to ablate the extruded disc matter itself. Thus decompression of the root may perforce be incomplete, or transient; for there is no guarantee that further proliferation will not take place postoperatively. Unfortunately it is impossible to gauge, before exploration, how far root damage is due to one factor rather than to the other. These facts in themselves may be taken as an argument against too hasty recourse to surgery.

Finally it has to be admitted that, although surgical treatment carries no more than the usual anæsthetic risk to life, operation does bring with it a small but definite hazard to the spinal cord, as Michelsen has pointed out, and as 1 of the 4 cases submitted to surgery in this series bears witness.

SUMMARY

A brief historical introduction to the subject of cervical disc prolapse is given.

The main features of 12 cases with radicular brachial neuralgia from lateral disc prolapse are summarised, their treatment indicated, and illustrative examples given.

The levels of disc protrusion are discussed, the symptoms and signs of involvement of various radicles are considered, and the usefulness of radiological findings assessed.

A plea for conservative treatment is entered.

My thanks are due to Professor Cloake for allowing me to re-examine and make observations on his patients.

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FUNCTION OF ERECTORES SPINÆ IN FLEXION OF THE TRUNK

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Fick (1911) believed that the erectores spinæ relax when the vertebral column is fully flexed. This means that when a man is bending down to the ground or sitting with a "round back"—both positions in which the vertebral column is in full flexion—the attitude of his spine is maintained by the ligaments and not by activity in his erectores spinæ. At that time Fick's hypothesis was not supported by any experimental evidence, but the technique of electromyography has made it possible to study the action of the spinal muscles in a normal man, and we are now reporting some relevant electromyographic findings.

METHOD

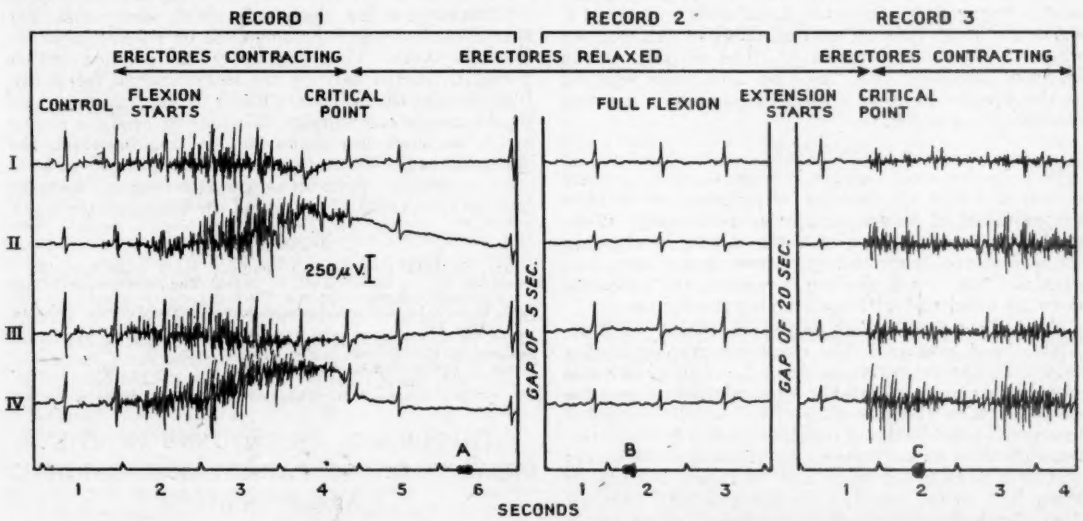
A six-channel amplifier with ink-writing oscillographs was used (standard Ediswan electro-encephalograph) and surface electrodes. The method is painless and does not disturb the muscle in any way. With this apparatus the action of three parts of the two erectores could be recorded simultaneously.

When the upper parts of the erectores are studied the trapezius, rhomboids, &c., interfere with the record, unless special precautions are taken. Nevertheless we have some evidence to show that the upper part of the muscle in the thoracic region behaves in the same manner as the lumbar part. The lower thoracic and lumbar parts of the muscle are simpler to study experimentally, and the thoracolumbar region, being the most mobile part of the trunk, is the part most commonly injured and of special clinical interest.

The electrodes were concave silver plates 1 cm. in diameter, and were held in position with adhesive plaster on the skin over the erectores at the levels of the spines T10, T12, L2, and L4. When the muscle is in action, the sum of the motor-unit action potentials in the vicinity is picked up by the electrodes and appears as a complex deflection on the recording pens. This is a modification of the method of Floyd and Silver (1950). Deeper parts of the muscles were investigated with needle electrodes and cathode-ray tube recording, but the findings were similar to those demonstrated with surface electrodes. We have failed to demonstrate activity in the deep parts of the erectores—e.g., in the multifidi—when the surface electrodes fail to show activity.

RESULTS

The results of this study are summarised in the accompanying figure, which shows a simultaneous recording on four channels, the upper two from the left, and the lower two from the right erector spinæ. All records are interrupted by the electrocardiographic complex, which is always present in electromyographic records of the trunk.



Electromyographic pattern of activity for thoracolumbar parts of erectores spinæ muscles. I, from the left thoracolumbar region, with the electrodes over the most prominent part of the erector spinæ opposite the spines of vertebræ T10 and T12. II, from the left lower lumbar region with the electrodes similarly placed opposite the spines of vertebræ L2 and L4. III and IV, from corresponding areas of the right erector spinæ.

Records 1, 2, and 3 are three excerpts from a single tracing obtained while the man bent down to the ground and up again. In the intervals between records 1 and 2 and between records 2 and 3 the tracing was identical with record 2. The photographs were taken at the times marked A, B, and C on the chart.

During the control period the trunk was upright, and the erectores show minimal activity for about 1 sec. The activity increases at the beginning of sec. 2 as the man bends forwards, and it continues to increase for 2 sec. By the beginning of sec. 5 the erectores are relaxed again, and photograph A shows the man's position immediately after relaxation.

When the man remains bent down to the ground (photograph B), relaxation continues, as shown in record 2. The contour of the back in photographs A and B is the same; only the position of hips and knees is altered.

The electrocardiographic complex occurs in all three records and is especially obvious in record 2, where there is no muscular activity.

Record 3 shows that the erectores suddenly become active again when the trunk is raised. Note that the erectores are not activated at the initiation of this movement; only the hips extend. Photograph C shows the man's position immediately after the erectores were reactivated; note the general similarity with photograph A.

During the 1st sec. of record 1 the man was standing upright, and the trace shows minimal activity in the erectores. About 1 sec. from the beginning of the record the man began to bend forwards, and the vertebral column and hip-joints began to flex. The activity in the erectores increased considerably for about 2 sec. as the man leaned further and further forwards, and the muscles acted as anti-gravity muscles to prevent the trunk from falling forwards. By the beginning of the 5th sec. of record 1 the erectores relaxed once more, in spite of the fact that the man was leaning forwards. The photograph A, to show the position of the trunk when the erectores were relaxed, was taken at the moment shown by the signal mark A in record 1, and this photograph shows approximately the critical position for relaxation of the erectores spinæ in this man when leaning forward. The spine was now fully flexed, and the erectores were relaxed and no longer acted as anti-gravity muscles. Their function, that of maintaining the position of the flexed spine, must therefore have been taken over by non-contractile tissue. Bending further downwards was achieved only by flexing the hip-joints: photograph B, taken at signal mark B in record 2, shows that the attitude of the back was unchanged, but the hips were more flexed than in photograph A, and the erectores were still inactive.

When the man began to raise himself again to the upright position, the movement began by an extension of the hip-joints. During this phase of the movement, the last part of which is shown in the 1st sec. of record 3, there was no activity in the erectores. At the beginning of the 2nd sec., however, the erectores became active again. Photograph C, taken at signal mark C in record 3, shows the man's position approximately at this moment when the erectores contracted. The activity in the erectores continued until the man once more returned to the upright position. Note the similarity between photographs A and C.

DISCUSSION

It is known that posture is maintained by muscle action, and that the function of ligaments is to limit the extremes of movement (Wiles 1935, 1937, 1949). During the initial stages of trunk flexion in standing the movement is controlled by the erectores spinæ; but, when the fully flexed position is reached, the ligaments alone are concerned with maintaining the position.

In the position of full flexion in sitting—Andry's (1743) "bad posture"—the electromyographic studies show that the erectores are relaxed. This position is often maintained comfortably for a relatively long time compared with the discomfort from a fully extended knee-joint, which becomes painful within a few minutes. This difference we attribute to the presence of the elastic ligamenta flava in the spine, and we regard this phenomenon not as an exception to the generally accepted ideas about the ability of ligaments to stand strain indefinitely but as a special case in view of the presence of the specialised elastic ligaments. However, we do not suggest that this position can be maintained indefinitely without discomfort, because certain people experience backache if they sit in the fully flexed position for a sufficient time—e.g., patients sitting in bed with only the thoracic part of the vertebral column supported, motor-car drivers, &c.

Presumably stretch receptors in the ligamenta flava and other ligaments are stimulated when these ligaments are stretched, and the afferent impulses from the stretch receptors cause reflex inhibition of the erectores spinæ. We do not at present possess a suitable laboratory animal for studying this reflex in detail, and have no direct experimental evidence to support this hypothesis. For this reason, at present, we prefer to speak of the "relaxation" rather than the "reflex inhibition" of the erectores. Such a reflex inhibitory mechanism, however, seems the most likely explanation.

The phenomenon can be useful clinically in differentiating back pain originating in muscle and back pain originating in ligaments. If a patient with pain in the back can be persuaded to bend to the fully flexed position, pain from ligaments should get progressively worse, whereas pain from muscle should improve (but will not necessarily disappear altogether). This has been demonstrated clinically in some cases.

The main interest, however, lies in the insight which we now have into the mechanism of injury to the annulus fibrosus. This injury often occurs when the spine is flexed (Wiles 1949). In this position the strain of the trunk falls on the ligaments. Owing to mechanical factors tensions of about 1500 lb. (Bradford and Spurling 1945) operate on these ligaments, plus any additional load which is being carried. The erectores spinæ do not share in bearing the load. The strain falls on the elastic ligamenta flava and the other less elastic ligaments, including the annulus fibrosus. These relatively inelastic structures are most easily damaged. Hence injury can result in apparently trivial circumstances—e.g., tying a shoe-lace (Jackson 1950). The patient need not have been lifting or lowering a weight (apart from his body-weight).

The relaxation of the erectores spinæ in the fully flexed position is in no sense "the cause" of rupture of the annulus fibrosus; it is only a contributory factor which can operate only in the circumstances described.

SUMMARY

Observations are described which show that full flexion of the spine is accompanied by relaxation of the erectores spinæ. Consequently in this position further flexion is limited only by the intervertebral ligaments. It is thought that there are limits to the time for which the ligaments can support this tension—e.g., in sitting—just as there are limits to the tension which the ligaments can withstand in weight-lifting.

Some clinical implications are described in backache and the mechanism of rupture of the annulus fibrosus.

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THIOURACIL COMPOUNDS IN THE PREVENTION OF PAROXYSMAL CARDIAC ARRHYTHMIA

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MANY drugs and manœuvres are advocated for terminating a paroxysm of cardiac arrhythmia; but there are few methods of preventing such attacks. Of these the best known are the administration of quinidine and digitalis (Linenthal and Freedberg 1949), dehydration (Gold 1948), and sympathetic denervation (White and Smithwick 1941). Not uncommonly these measures fail; and, with quinidine, problems of dosage and toxicity may arise.

Because thiouracil compounds are effective in the control of angina pectoris, and because the factors which precipitate attacks of angina and the paroxysmal cardiac arrhythmias are mainly identical, I thought that these

drugs might prove of value in preventing the latter. Since October, 1949, thiouracil derivatives have been administered to seven patients, in all of whom previous treatment with quinidine and digitalis had been unsatisfactory, because it failed or caused untoward reactions. Four of these patients were women and three were men, their ages varying from 22 to 67 years. The frequency of the attacks varied greatly: in four cases these were a daily occurrence; in two cases there were several bouts each week; and in one case several each month. One patient was admitted to hospital because of the severity of the attacks, whereas the remainder were treated as outpatients.

Of the seven patients, two had apparently normal hearts, three had hypertensive heart-disease, and two had rheumatic valvular disease. None showed evidence of thyrotoxicosis. Electrocardiographic proof of the arrhythmia was obtained in six cases; three had supraventricular tachycardia, two auricular flutter with auriculo-ventricular block, and two auricular fibrillation.

CASE-REPORTS

Case 1.—A married woman, aged 60, was admitted to the Johannesburg Hospital on July 18, 1949, complaining of attacks of palpitation and breathlessness of 8 years' duration, which had become more severe and more frequent in the past few months, when they had been lasting for hours or even days. They were usually precipitated by exertion and by emotional disturbance.

The patient was very obese and distinctly cyanosed; pulse-rate 200 per min., and blood-pressure (B.P.) 170/110 mm. Hg. The electrocardiogram showed auricular flutter with 2:1 auriculo-ventricular block. The attack was terminated in 6 hours by means of gr. $^1/_4$ of morphine, and gr. 6 of quinidine orally every 2 hours. Despite continued administration of gr. 6 of quinidine at 8-hourly intervals, 2 days later she had a further paroxysm, with a ventricular rate of 140 per min. Digitalisation (digoxin 1 mg. intravenously, followed by 0·25 mg. daily by mouth), combined with gr. 3 of quinidine 3-hourly and later 2-hourly, did not prevent the paroxysms, which recurred with a ventricular rate varying from 140 to 220 per min. During some of the attacks she became extremely dyspnœic and cyanosed, with a fall of B.P. to 80/60 mm. Hg; and on several occasions, when the attack had continued for more than 6 hours, congestive cardiac failure developed, necessitating strict salt restriction and the administration of mercurial diuretics. Additional remedies, such as intravenous procaine, aminophylline, and 'Neosynephrin,' were tried at different times in an attempt to terminate the more severe attacks; but gr. 3 of quinidine intravenously proved the most effective.

Between paroxysms the pulse-rate was 80 per min. and the B.P. 180/110 mm. Hg; the electrocardiogram revealed a normal rhythm with evidence suggestive of left ventricular hypertrophy. Radiologically the heart was enlarged with a hypertensive configuration.

On Oct. 10 treatment with methyl thiouracil—0·6 g. daily in three divided doses—was begun, while the patient continued to take gr. 6 of quinidine at 4-hourly intervals. Except for one mild attack, on the second day of this treatment, there followed a period of freedom from attacks which lasted almost 3 months, the patient becoming ambulatory within a fortnight after having been bedridden for 8 weeks. The dose of quinidine was decreased until it was finally discontinued at the end of one month. The basal metabolic rate shortly after the start of treatment with methyl thiouracil was + 28%.

After her discharge from hospital on Dec. 2 the patient remained free of attacks until Dec. 23, when she was frightened by a flash of lightning and immediately developed a paroxysm. Several further attacks occurred during an emotional crisis occasioned by the sudden illness of her husband.

She was readmitted to hospital on Jan. 6, 1950. While taking methyl thiouracil, she continued to have mild bouts which were terminated promptly by quinidine intravenously in gr. 3 doses. The basal metabolic rate on Jan. 16 was +25% and the blood-cholesterol 270 mg. per 100 ml. The electrocardiographic pattern recorded during paroxysms was the same as before. Propyl thiouracil—0·6 g., and later 1·2 g., daily—was substituted for the methyl preparation. The attacks became still less frequent and more readily controlled by intravenous quinidine. On March 10, the daily dose of propyl thiouracil was reduced to 0·6 g. in three divided doses, and gr. 6 of quinidine was added to each dose. Since then the attacks have become infrequent and less severe, each responding promptly to gr. 3 of quinidine intravenously.

After administration of methyl thiouracil this patient, previously completely incapacitated and at times dangerously ill, was able to lead a comparatively normal life. While she is still not entirely free of paroxysms, they are now infrequent, mild, and easily controlled.

Case 2.—A 36-year-old housewife first consulted me in November, 1948, with a 28-year history of paroxysmal tachycardia. During the past few years the attacks, which had been occurring almost daily, were usually short and were often terminated by deep breathing or drinking iced water. They were usually precipitated by physical exertion or emotional stress and were more prone to come on before and during menses. Throughout her first pregnancy in 1947 she was completely free of attacks.

The patient was a well-developed, apprehensive young woman with no demonstrable cardiovascular abnormality other than persistent tachycardia at a rate of 100 per min. There was no clinical evidence of thyrotoxicosis and repeated basal metabolic-rate determinations were normal. The B.P. was 130/80 mm. Hg, and radiologically the cardiac shadow was normal. An electrocardiogram obtained during an attack in 1945 showed supraventricular tachycardia at a rate of 160 per min. Between paroxysms, at rest and after exercise, the electrocardiogram was normal.

One year later—in 1949—her condition was unchanged. Treatment with propyl thiouracil in a daily dosage of 0·6 g., given in three divided doses, was started, and within a week the bouts of palpitation had ceased. After 8 weeks, owing to the severe nausea and vomiting of pregnancy, she discontinued the drug; and she then had a further four severe attacks within 2 weeks; on recommencing the drug the attacks again ceased. Because during a previous pregnancy she had been completely free from attacks, it was decided to exclude the present pregnancy as the cause of her recent improvement. The drug was therefore again discontinued, but within 10 days there was an unusually severe attack lasting twenty-four hours followed by a series of shorter bouts at brief intervals. Within 5 days of recommencing propyl thiouracil in the daily dosage of 0·3 g., the paroxysms again ceased completely and have not recurred.

The prompt and complete control of the frequent paroxysms while taking propyl thiouracil, and their early recurrence on discontinuing the drug, are noteworthy features in this case.

Case 3.—A moderately obese 50-year-old man had been experiencing occasional attacks of palpitation for 7 years until 3 years ago when he began to have three or four attacks each week. The paroxysms, each lasting 6–8 hours, occurred usually at night when he was tired or worried, and could usually be terminated within a few hours by gr. 6 of quinidine.

In 1948 no clinical evidence of cardiovascular disease was found, the resting pulse-rate being 72 per min. and the B.P. 130/90 mm. Hg. Radiologically the cardiac shadow was normal; and the basal metabolic rate was − 5%. The electrocardiogram was normal at rest and after exercise, but during a paroxysm it showed auricular fibrillation. Quinidine in doses of gr. 6 thrice daily failed to prevent the attacks, and increase in the dosage was impracticable as it caused diarrhœa. Digitalis likewise proved ineffective.

In November, 1949, the paroxysms were occurring every night. Methyl-thiouracil treatment was started with 0·6 g. daily in three divided doses. No improvement was noted after one month, so gr. 6 of quinidine was given with each dose of methyl thiouracil. The attacks ceased promptly. Propyl thiouracil was substituted for methyl thiouracil in the same dosage, and quinidine was omitted; but the nocturnal paroxysms returned within a few days. Next, the total daily dose of propyl thiouracil was given at bedtime, but no improvement ensued; so a single combined dose of 0·3 g. of propyl thiouracil with gr. 6 of quinidine was given at night. On this régime the attacks soon became fewer and shorter; but because paroxysms began to occur also during the daytime, 0·2 g. of propyl thiouracil was given with gr. 6 of quinidine every 8 hours; and within a few days the attacks ceased except for an occasional mild paroxysm.

This case demonstrates the value of the use of thiouracil together with quinidine for the control of paroxysmal auricular fibrillation, where neither alone has proved effective.

Case 4.—A 22-year-old man, a university student, was seen in 1947 because of infrequent attacks of rapid heart action, of one year's duration, each bout lasting 6–12 hours. He had had three attacks of rheumatic fever. Clinical and radiological examination revealed gross cardiac enlargement with mitral stenosis and aortic incompetence. The resting pulse-rate was 80 per min., and the B.P. 120/70 mm. Hg. Between attacks the electrocardiogram was normal except for the presence of mitral P waves. The paroxysms were relieved by the administration of gr. 9 of quinidine daily. During the ensuing months, the attacks became more frequent and severe; and in 1948, despite gr. 18 of quinidine daily, he was experiencing weekly paroxysms with a regular rhythm and a rate varying from 130 to 180 per min. To induce dehydration, supplementary therapy was instituted with ammonium chloride, mercurial diuretics, and salt restriction; but these had no effect.

During 1949, his condition deteriorated; despite digitalisation and the daily administration of gr. 30 of quinidine, two attacks of arrhythmia were occurring each week. These attacks were longer, persisting for 6–12 hours, and were terminated only after three or four doses of gr. 9 of quinidine had been taken at hourly intervals. Invariably the omission of a single routine dose of quinidine was promptly followed by a paroxysm, which was sometimes precipitated by emotional stress or undue physical exertion. Nevertheless, he had been able to lead a fairly active university life.

Re-examination in December, 1949, showed a further increase in the size of the heart although there were no signs of congestive cardiac failure. An electrocardiogram during an attack showed auricular flutter (auricular rate 240, ventricular rate 90 per min.) with a varying auriculo-ventricular block resulting in a very irregular pulse.

While treatment with digitalis and quinidine continued, methyl thiouracil in daily doses of 0·6 g. was instituted. After 2 months, there having been no diminution in the frequency or severity of the attacks, propyl thiouracil was substituted and was given at the higher dosage level of 1·0 g., and later of 1·2 g. daily; but again no preventive effect was noted.

This case demonstrates the failure of thiouracil derivatives to prevent attacks of auricular flutter in a patient suffering from valvular heart-disease of rheumatic origin with gross cardiac enlargement.

Case 5.—A 67-year-old widow, first examined in July, 1946, complained of daily attacks of palpitation, lasting from a few seconds up to 8 hours, which began with the menopause in 1932. She was anxious and moderately obese, with a pulse-rate of 84 per min. and a B.P. of 190/110 mm. Hg. No clinical evidence of thyrotoxicosis was apparent. Orthodiascopic examination showed unfolding of the aorta and an increase in cardiac size due to left ventricular enlargement. The electrocardiogram was normal between attacks, but showed the presence of auricular fibrillation during a paroxysm.

Quinidine was prescribed in a daily dosage of gr. 9 and the attacks became less frequent; but because of nausea the patient would not continue to take this drug. Digitalis was thereupon substituted, with subsequent improvement; but she discontinued this drug of her own accord.

In 1949 chronic lymphatic leukæmia was diagnosed. The paroxysmal auricular fibrillation had persisted, but the cardiovascular state had not deteriorated. Propyl thiouracil —0·6 g. daily—was prescribed in January, 1950. The effect was immediate, there being only one subsequent attack of fibrillation. Since the leucocyte-count fell rapidly from 48,000 to 24,000 per c.mm., the dose of propyl thiouracil was reduced to 0·15 g. daily; and thereafter she had two more paroxysms. Since then she has remained completely free of bouts while taking 0·3 g. of propyl thiouracil daily; and the improvement in her emotional state, in her sense of well-being, and in her loss of heart-consciousness has been most striking.

This case demonstrates the immediate and complete inhibition of very frequent paroxysms of auricular fibrillation by means of propyl thiouracil without quinidine or digitalis.

Case 6.—A 47-year-old merchant presented himself in January, 1950, with the complaint that for 2 years he had suffered from attacks of racing of his heart two or three times each month, following emotional stress. He experienced a sense of constriction of his chest when emotionally upset, but not on exertion. Clinical examination revealed pulsus bisferiens at a rate of 80 per min. with occasional extra-systoles, a blood-pressure of 110/80 mm. Hg, and the auscultatory signs of aortic stenosis and incompetence with mitral stenosis. On X-ray screening the heart was found to be enlarged, owing to hypertrophy of the left ventricle. The electrocardiogram with the patient at rest showed a normal rhythm and evidence of left ventricular hypertrophy. Although no changes in the S–T segment took place after exercise, the precordial constriction was regarded as anginal. A tracing during a paroxysm revealed supraventricular tachycardia. Treatment with digoxin had failed to influence the symptoms.

Propyl thiouracil—0·6 g. daily—was prescribed, and within a few days the attacks of precordial constriction after excitement ceased. The patient has remained free of paroxysmal tachycardia for three months on a maintenance dose of 0·3 g. of the drug daily.

In this case paroxysms of arrhythmia were always infrequent; but since treatment with thiouracil was started the period of freedom from attacks has exceeded the duration of the natural intervals in the past.

Case 7.—A housewife, aged 43, was seen in July, 1948, with the history that for 3 years she had suffered from bouts of palpitation lasting $^1/_2$–2 hours, each bout starting and ending suddenly. The number of these attacks varied from several in a day to one in a month. She appeared anxious and tremulous, the pulse-rate being 96 per min. and the blood-pressure 180/110 mm. Hg, but no signs of thyrotoxicosis were evident. Screening of the heart showed prominence of the left ventricle and a normal transverse diameter. An electrocardiogram obtained between attacks revealed evidence of left ventricular hypertrophy. The basal metabolic rate was +14%.

During the ensuing 6 months she remained moderately free of paroxysms while taking gr. 9 of quinidine daily together with small doses of phenobarbitone. Subsequently, after several attacks lasting 6–8 hours, the dosage of quinidine was increased to gr. 15 daily. She apparently discontinued treatment; and when she was again seen in February, 1950, the paroxysms were occurring three to four times each week and were lasting up to an hour. The B.P. was 160/100 mm. Hg and the electrocardiogram was unchanged; but the cardiac shadow had increased by 0·5 c.m. in its transverse diameter. Her family doctor witnessed an attack in which the pulse-rate was 120 per min. and the rhythm regular. Methyl thiouracil was prescribed in the daily dosage of 0·6 g., and within a week she had become free of paroxysms except for an occasional bout lasting only a few minutes. Within a few days of her discontinuing the drug, because of an intercurrent infection, the bouts recurred; but they again ceased shortly after treatment was resumed.

Electrocardiographic proof of the nature of the arrhythmia was not obtained in this case, but the attacks were probably due to supraventricular tachycardia.

DISCUSSION

The rôle of emotional stress in precipitating extra-systoles, paroxysmal auricular tachycardia, and auricular fibrillation in individuals with normal or diseased hearts has been demonstrated by Duncan et al. (1949). In each of the cases in the present study there was obvious emotional disturbance with anxiety or depression, while in several there was clear evidence of the precipitation of attacks of arrhythmia by emotional stress. Emotional stimuli are thought to produce this effect through the autonomic nervous system and the endocrine glands—particularly the thyroid and adrenal (Katz et al. 1947).

Circulating adrenaline increases under a variety of circumstances, prominent among which are emotional stress and physical effort; and adrenaline tends to accumulate in the myocardium, on which it has an anoxiating effect (Green et al. 1942). This effect is augmented and intensified by thyroxine (Raab 1945a), while thiouracil diminishes the sensitivity of the normal heart to adrenaline (Raab 1945b). On the supposition that an excess of circulating adrenaline was responsible

for precipitating attacks of angina pectoris, this condition was successfully treated with thiouracil (Raab 1945c).

The rapidity with which some cases of angina pectoris or paroxysmal arrhythmia respond to treatment with thiouracil compounds, and the early relapses when such treatment is discontinued, suggest a similar mode of action of the drugs in these two conditions. Possibly thiouracil exerts a direct effect on the myocardium; and its action apparently does not depend on reduction in the rate of metabolism. Where the drug proved effective the attacks were brought under control within a week, whereas where no response was noted within this period no effect was obtained from further administration of the drug.

Of the seven patients studied in the present series, six had failed to respond adequately to quinidine. In those patients that do respond to quinidine, the maintenance dose of this drug may perhaps be reduced by the addition of a thiouracil compound. Conversely, where the response to thiouracil is complete, the dosage can probably be reduced by the additional administration of quinidine.

Although this preliminary study has not definitely established the relative therapeutic value of the thiouracil compounds compared with quinidine or digitalis, further trials of the former drugs in the preventive treatment of the paroxysmal cardiac arrhythmias would appear to be warranted.

SUMMARY

Methyl and/or propyl thiouracil was administered in seven cases of paroxysmal cardiac arrhythmia.

In four the paroxysms were completely prevented; in two they became less frequent and less severe; and in one there was no response.

In two patients the combination of a thiouracil compound with quinidine was more effective than either drug alone.

It is a pleasure to record my gratitude to Dr. M. M. Suzman, of Johannesburg, for his help in the preparation of this paper.

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TRIAL OF β-NAPHTHYL-DI-2-CHLOROETHYLAMINE IN LEUKÆMIA, HODGKIN'S DISEASE, AND ALLIED DISORDERS

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SINCE the war-time investigations of Wilkinson, begun in 1942, on the cytotoxic effects of β-chloro-alkylamines and their therapeutic value in leukæmias and reticulosis (Wilkinson and Fletcher 1947) many groups of workers have reported similar observations.

Widely different degrees of benefit have been described. In our series of over a hundred cases of chronic leukæmia, Hodgkin's disease, and allied disorders treated usually with the nitrogen mustard tris-β-chloroethylamine hydrochloride ('HN3') intravenously, satisfactory remissions have been obtained in at least 80% of the cases (Gardikas and Wilkinson, to be published).

Since the therapeutic effects of this type of substance have been confirmed, intensive search has been made for similar compounds that might exert more effective and more prolonged effects without their general cytotoxic effects. At the same time, the greater convenience and safety in unskilled hands of substances suitable for oral administration would circumvent some of the inherent difficulties of the present intravenous treatment. Burchenal (1948) has reported his experience with two nitrogen-mustard derivatives—the 1 : 3 propane diamine NNN′N′ tetrakis (2-chloroethyl) dihydrochloride ('SK136') and the 1 : 3 propane-diamine-2-chloro NNN′N′ tetrakis (2-chloroethyl) dihydrochloride ('SK137'). Both products were tried in leukæmia but showed no advantages over the original nitrogen mustards. Craver (1948) also has reported similar negative results. Haddow et al. (1948) prepared a series of aromatic nitrogen mustards, and one of these products, β-naphthyl-di-2-chloroethylamine ('R48'), has been subjected to clinical trials by several groups of workers under the ægis of the Medical Research Council. The present report summarises our results in this therapeutic trial. Matthews (1950) has already reported the results obtained by another group in these trials.

CLINICAL MATERIAL

Twenty-five patients (eleven male and fourteen female) have been treated with R48 in this series. There were eight cases of chronic lymphatic leukæmia, five of chronic myeloid leukæmia, two of acute leukæmia, seven of Hodgkin's disease, one of lymphosarcoma, one of giant follicular reticulosis, and one of mycosis fungoides. The patients were adults aged 17–69, except for one child aged 12 years.

Diagnoses of the particular diseases were made by the usual clinical and pathological observations, including marrow biopsy in all cases, gland biopsy in all cases of Hodgkin's disease, lymphosarcoma, and giant follicular reticulosis, and skin biopsy in the case of mycosis fungoides.

DOSAGE AND METHOD OF USE

β-naphthyl-di-2-chloroethylamine (R48) was given by mouth in divided doses three times daily to a total of 100–400 mg. daily. In chronic leukæmia the treatment was usually continued until the white-cell count had fallen to about 20,000 per c.mm., unless toxic symptoms necessitated an earlier discontinuance of the treatment. In Hodgkin's disease or other reticuloses in which there was little leucocytosis before the start of the treatment, the criteria for the continuation of treatment were less rigid in view of our experience with intravenous therapy. As a rule the treatment was continued until a white-cell count of about 3000–4000 per c.mm. was reached, or until clinical symptoms and signs—e.g., lymphadenopathy—had disappeared. After preliminary trials had established a safe line of procedure, the patients, while under treatment with R48, were seen regularly at weekly or fortnightly intervals for blood-counts and clinical examination. When the initial course had been completed and remission obtained, the treatment was discontinued, the patient still being followed up at fortnightly or monthly visits, and further courses being given when required. Attempts to introduce a maintenance dose in the hope that the duration of the remission could be prolonged considerably were not satisfactory, for we noted that usually a very small maintenance dose remained ineffective, whereas a larger one might produce leucopenia.

TOXIC EFFECTS

In one patient with chronic lymphatic leukæmia treatment with R48 produced gross hæmaturia necessitating a discontinuance of treatment and another

patient developed a moderate dysuria with microscopical hæmaturia; but both conditions cleared completely as soon as treatment was stopped. A generalised purpuric rash developed in another patient without thrombocytopenia, but cleared satisfactorily. In two other cases a transient maculopapular rash was noted, but further treatment was given uneventfully. In no case was there any relation between the appearance of toxic symptoms and the daily or total dose of the drug administered.

RESULTS*

Acute Leukæmia

Two patients with acute leukæmia were treated with R48. One was given total doses of 6·8 g. in 17 days, and the other 21·6 g. in 30 days. The disease followed its usual course without any symptomatic relief or objective improvement.

Chronic Myeloid Leukæmia

Five cases of chronic myeloid leukæmia were treated. In two cases satisfactory clinical and hæmatological remissions were obtained: the white-cell counts fell from 139,000 to 13,600 per c.mm. and from 233,000 to 16,000 per c.mm.; the hæmoglobin values rose moderately; the general condition improved; and the feeling of well-being returned. Splenomegaly regressed considerably in one patient but remained almost unaffected in the other. Both patients have had repeated courses; both are alive and well with fairly good working capacity 20 and 22 months after the institution of the treatment. In the third case there was no improvement, though the white-cell count fell from 158,000 to 42,000 per c.mm.; the patient died 2 months after R48 treatment was started, but by then he had reached a very advanced stage, having received treatment previously with urethane and other agents for 30 months. The fourth case was in a boy, aged 17, with 6 months' history of subjective symptoms and presenting a typical clinical and hæmatological picture of chronic myeloid leukæmia. He had had no previous treatment and was given R48 300 mg. daily for 30 days—a total dose of 9 g. At the end of this period the lymph-node and splenic enlargements remained the same, and the white-cell count rose from 120,000 per c.mm. before treatment to 290,000 per c.mm. Subsequent treatment with intravenous tris-β-chloroethylamine produced very rapidly a good remission. Another patient has had treatment for only a short time but is responding satisfactorily.

Chronic Lymphatic Leukæmia

Eight cases of chronic lymphatic leukæmia were treated. In two the results were satisfactory; good and long remissions were obtained, and both patients are well, with full working capacity, 22 and 20 months after the start of treatment with R48. Two other patients presented only remissions in their constitutional symptoms but no reduction of lymphadenopathy. They have not yet returned to work 19 and 4 months since treatment with R48 was first given. In three other patients, although the white-cell counts returned to normal, the lymph-node and splenic enlargements showed no changes, the anæmia did not improve, and the patients died 1, 1, and 9 months after treatment with R48 had been begun, without any apparent relief of the clinical course of the disease. Another patient has had treatment for only a short time.

Hodgkin's Disease

Seven patients have been treated. In three the results were very good and the involved tissues regressed completely or almost completely. The quantities required to produce these remissions were 5 g. in 50 days, 45 g. in 150 days, and 24 g. in 60 days. The general condition was good in all three cases and has remained good until now, 7, 20, and 24 months since treatment began. Another patient was a woman of 45 who had previously been treated with intravenous tris-β-chloroethylamine for 2 years, which had produced such remarkably good results in this time that she had continued to run a very busy company and had regained her well-being; she had gained so much weight as to render it very difficult to give intravenous therapy owing to poor access to veins, and so for over 12 months now she has been maintained on R48 with good response. One patient has severe Hodgkin's disease involving soft tissues and skeletal structures, and has responded quite well to intravenous therapy. Owing to technical difficulty with her veins also, she has been put on to R48 orally, but the response is not very good. In two other cases the treatment failed and both patients died after having received 3·3 g. in 24 days and 3·4 g. in 17 days.

Miscellaneous Diseases

One patient with lymphosarcoma showed no improvement and died after having received 8·7 g. of R48 in 30 days.

In a patient with giant follicular reticulosis with generalised severe lymphadenopathy, treatment with R48 for 32 days (total dose 6·4 g.) did not affect the disease. On the contrary, the pre-existing glands increased somewhat and additional glands became enlarged during the treatment. Subsequently a course of tris-β-chloroethylamine was given, with considerable diminution in size of the lymph-nodes.

Finally, a case of mycosis fungoides treated with R48 is reported.

Mrs. A., aged 40, had noted a red patch on the left thigh for many years. Since November, 1948, new red patches had appeared on both lower extremities. A further spread had occurred in August, 1949, when similar lesions appeared on the forearms. At the beginning of October, 1949, a vesicle appeared in the original lesion of the left thigh, and soon an ulcer formed. Skin biopsy confirmed the diagnosis of mycosis fungoides. Apart from the skin lesion the general condition was very good. On the internal surface of the left thigh there was a tumour 5 cm. in diameter, with a deep oval oozing ulcer; the base of the ulcer was covered with necrotic greyish substance. In addition, there were about a dozen patches (about $^3/_4$ in. diam.) located on both legs, both forearms, and the left breast. The patches were red and well defined; few of them were infiltrated, and the skin over them was scaly. After X-ray irradiation the ulcer healed towards the end of December, 1949, but a month later a new ulcer appeared on the same thigh with the same characteristics as the first ulceration. This time the patient was given a course of R48, starting on Jan. 18, 1950, with a daily dose of 100 mg. Two weeks later a definite improvement was already noticeable; the base of the ulcer began to dry and in two months, after 5·5 g. of R48 had been given, the ulcer was completely healed. The hæmatological picture remained unaffected throughout the treatment (red cells about 4,500,000 per c.mm., Hb 90–100%, and white cells 9000–13,000 per c.mm.).

The beneficial effects of nitrogen mustard in some cases of mycosis fungoides have been described by Henstell et al. (1947), Osborne et al. (1947), Philpott et al. (1947), and Craver (1948).

DISCUSSION

Despite the small number and diversity of cases treated with R48, certain facts seem suggestive in the comparison of R48 with nitrogen mustard by intravenous administration:

(1) The effect of R48 has been inferior to that of intravenous nitrogen mustard. In our experience, in over 80% of patients with chronic leukæmia or Hodgkin's disease satisfactory remission follows the first course of nitrogen-mustard injections. The remission includes a return of the white-cell count to normal, a rise in the hæmoglobin level, considerable regression or total disappearance of enlarge-

*Further details of the cases treated are given in a table obtainable on request from THE LANCET Office, 7, Adam Street, Adelphi, London, W.C.2.

ment of spleen or lymph-nodes, and return of feeling of well-being. Our experience with R48 has not been equally satisfactory. Remissions, when obtained, have been, in most cases, only partial. The white-cell count returned to normal, but spleen and node masses either remained completely unaffected or were only partially obliterated.

Thus a discrepancy between the effect of the treatment on the white cells, on the one hand, and on enlarged spleen and lymph-nodes, on the other, was observed in most cases, and we consider this discrepancy to be a serious drawback—first because the leucocytosis constitutes only one element of the disease; and secondly because a fall of the white-cell count necessitates discontinuance of treatment for fear of a severe leucopenia, and one has to wait until the white-cell count rises before another form of treatment, such as intravenous nitrogen mustard, is given.

(2) Whereas treatment with intravenous β-chloro-alkylamine induces remissions quickly (usually within 20–30 days), the time in which R48 induced remissions varied widely. The lengths of time between the beginning of the course and the restoration of the white-cell count to normal in cases of chronic leukæmia were:

Case no.	*Type of leukæmia*	*No. of days*	*Total dose (g.)*
1	Lymphatic	21	6·6
2	Lymphatic	60	18·0
3	Lymphatic	34	13·6
4	Lymphatic	50	9·0
5	Myeloid	100	40·0
6	Myeloid	50	12·4

In cases of Hodgkin's disease the times from the start of treatment to the optimal regression of enlarged masses were:

Case no.	*No. of days*	*Total dose (g.)*
7	150	45·0
8	60	24·0
9	50	50·0

This wide variation in the length of the courses constitutes another drawback of R48 treatment, because it necessitates a long stay in hospital or frequent visits to the outpatient clinics.

In brief, therefore, our impression from the therapeutic trial of R48 has been disappointing in many respects, for it does not seem to replace satisfactorily treatment with β-chloro-alkylamines. On the other hand, R48 is effective by mouth in some cases and may therefore be of value in cases where intravenous administration is technically difficult or impossible.

SUMMARY

Twenty-five patients were treated with β-naphthyl-di-2-chloroethylamine (R48) by mouth.

Of eight patients with chronic lymphatic leukæmia, two responded to the treatment satisfactorily, in two the results were poor, and three died soon after the first course of treatment. Another patient is still in the first course.

Of five patients with chronic myeloid leukæmia, two showed a satisfactory response, one did not respond at all, one died soon after the first course was completed, and one is still in the first course.

Of seven patients with Hodgkin's disease four responded well to the treatment, one did not respond at all, and two died.

No response was obtained in a patient with lympho-sarcoma and in a patient with giant follicular reticulosis; one patient with mycosis fungoides responded well.

The results as a whole have been inferior to those obtained with the β-chloro-alkylamines intravenously.

This work was done during the tenure of the Sybil Mary Pilkington Fellowship by one of us (C. G.) and as part of a special investigation for the Medical Research Council, from whom a research grant was received. Our thanks are due to Prof. A. Haddow for the supply of R48.

References at foot of next column

ACROSCLEROSIS

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ACROSCLEROSIS is relatively rare, and there is much conflict of opinion about whether it is an independent clinical syndrome or not.

Acrosclerosis, scleroderma, sclerœdema adultorum, and dermatomyositis have been grouped together as dermato-scleroses, because hardening of the skin is common to all of them at some time during their course (O'Leary 1943). They have other features, such as (1) involvement of the body musculature (this occurs in acrosclerosis, scleroderma, and dermatomyositis, but not in sclerœdema adultorum); (2) a tendency for the cutaneous involvement to be self-limited, the œdema subsiding and leaving various degrees of atrophy; (3) pigmentation, which may occasionally be marked; and (4) calcinosis, or deposition of calcium in the skin and muscles (this is common to all except sclerœdema adultorum).

Difficulty arises in establishing these four conditions as separate entities. Scleroderma and dermatomyositis have been regarded as one and the same disease (Dowling 1940, Freudenthal 1940), and Sellei (1934) was much criticised for suggesting that acrosclerosis should be considered quite apart from scleroderma. Sellei is supported by O'Leary and Waisman (1943), who tabulate the differences—especially in sex-incidence, prodromal symptoms, sites of lesions, prognosis, and pathogenesis—between the two conditions.

The cardinal feature of acrosclerosis is its invariable association with the Raynaud phenomenon; this is usually well established months or years before the skin lesions appear, but occasionally the vasomotor and cutaneous signs appear almost simultaneously. O'Leary and Waisman (1943) suggest that sclerodactylia must be regarded as a potential complication of Raynaud's syndrome. Raynaud himself noted the association of acral cutaneous sclerosis with the vasomotor symptoms which now bear his name.

CLINICAL PICTURE

Changes in Skin

The cutaneous changes are essentially those of typical scleroderma, but they are confined to the distal parts of the extremities, the face, and the neck. Over the fingers and hands the skin is thin, smooth, shiny, and tense. The colour may be altered by pigmentary changes or by vascular disturbance, appearing coppery owing to increased pigmentation, or dusky or frankly cyanotic owing to impairment of circulation. The fingers are characteristically rigid and held in a position of semi-flexion, and the skin over the dorsum of the hands is so adherent to the underlying structures that it is impossible to pick it up between the thumb and index finger. These changes of the fingers and hands persist beyond the level of the wrists and merge into normal skin on the forearms. Trophic changes—e.g., ulcers—are commonly found on the backs of the fingers, and

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the hands are cold and often moist. A similar condition, but usually less severe, is found on the lower extremities. Here abnormal skin usually merges with normal skin below the knee, and deformity is not as apparent as it is in the hands; but clawing of the toes and complete immobility of the ankles may ensue. The feet are cold, yet sweating.

Calcium may be deposited in the soft tissues; when this true calcinosis coincides with sclerodermatous skin changes it constitutes the Thibierge-Weissenbach syndrome (Lindsay et al. 1943).

Facial sclerosis may coincide with the appearance of sclerodactylia, or its onset may be delayed for some years (Ormsby and Montgomery 1948). As the condition develops, the skin of the face becomes drawn and taut, and all its mobility is lost. The lips are thinned and radially furrowed, and small furrows may appear on the chin. The nose is prominent, sharp, and pinched, giving the patient a rather "peaked" expression, because the skin is stretched taut over the underlying cartilage. The skin of the eyelids is involved, and the process also spreads down the neck to the clavicles, where it gradually merges with normal skin covering the thorax and shoulders. In the fully established case the face may appear like that of a corpse (Ormsby and Montgomery 1948), with pigmentation of the facial skin and telangiectasis, the coppery hue suggesting Addison's disease. Pruritus is uncommon; the first symptom of any skin change is stiffness. In contrast to true scleroderma, acrosclerosis does not progress but remains confined to the face and extremities for many years; it may partly regress even after twenty years (O'Leary and Waisman 1943).

Histologically the skin resembles that seen in diffuse scleroderma (O'Leary 1943). The first published notes on the histology of this type of cutaneous lesion were those of Crocker (1880), who found the epidermis unaltered except for pigmentation and the occasional presence of a few wandering leucocytes; the corium with papillæ less prominent than usual and with perivascular lymphocytic infiltrations; and the ducts of the glands obliterated by fibrous tissue. Modern histopathologists have elaborated further, and attention is now focused on the collagen tissues of the body (O'Leary and Waisman 1943, Ormsby and Montgomery 1948, Klemperer et al. 1942, O'Leary and Nomland 1930, Lewis 1940, Freudenthal 1940). The first sign is an œdema of the collagen bundles in the cutis, which causes swelling and separation of the bundles. As the process continues, its sclerosing nature is made manifest, the bundles losing their fine fibrillary structure and becoming hyalinised and matted together. Changes in the elastic tissue are variable, some workers recording absence of, or diminution in the number of, elastic fibres, whereas others find these normal or possibly thickened. The vessels may show "cuffing" with mononuclear cells, chiefly lymphocytes, and plasma cells, and obliterative sclerosing changes chiefly involving the intima. The epidermal changes are not well marked and are only secondary to the œdema and sclerosis of the underlying tissue. The epidermis is thinned, and the rete pegs are flattened and fewer than normal (Freudenthal 1940). Subcutaneous fat is absent, and there is atrophy of the dermal appendages, the sweat glands being probably least affected (Ormsby and Montgomery 1948). Increased melanin pigmentation may be seen.

Arthralgia

As well as the more obvious cutaneous manifestations, arthralgia and dysphagia may accompany acrosclerosis. The arthralgia may, as with the Raynaud phenomena, be a premonitory symptom, but Sellei (1934) refers to changes in the joints, in addition to the flexion of the phalanges, which he terms pseudo-arthritis deformans.

Dysphagia

The dysphagia is of several kinds: (1) difficulty in initiating deglutition, owing to the rigidity of the face; (2) difficulty in opening the mouth and in mastication; and (3) true dysphagia, which is present in over 10% of the patients (Ormsby and Montgomery 1948). A retrosternal burning sensation may be the first symptom of œsophageal involvement. Involvement of the œsophagus can be detected by radioscopy or by endoscopy, including biopsy.

The œsophageal changes are apparently identical with those of scleroderma and have been well described by Olsen et al. (1945). Dysphagia in scleroderma was first recorded by Ehrmann (1903), who did an œsophagoscopy and noted changes in the œsophageal mucosa. Schmidt (1916) reported on the radiological appearances after a barium swallow in a patient who had scleroderma with dysphagia: although no lesion was detected in the œsophagus, fifteen minutes was required to allow for passage of the barium into the stomach; and the greatest delay was noticed at the cardia, where peristalsis was less than normal. In 15 of 18 cases of acrosclerosis reported by Olsen et al. (1945) conclusive radiological findings were demonstrable: œsophageal dilatation with atony of the œsophageal musculature was noted in 6 (peristalsis was decreased or absent in these); apparent spasm at the cardia, with obstruction, was noted in 4, and the passage of barium was slower than normal. The radiological diagnosis in all these cases was one of cardiospasm. This finding supports the clinical manifestations, the patients often localising their symptoms to the lower end of the œsophagus. Olsen et al. (1945) observe that œsophageal lesions tend to occur in advanced cases of acrosclerosis, and therefore the prognosis is not good, and they correlate Raynaud phenomena and cardiospasm as being due to disturbance of the autonomic nervous system. They suggest that some common ætiological factor exists in the vasomotor, dermatological, and œsophageal disturbances observed in acrosclerosis. The œsophageal dysfunction can be traced from simple delay in the passage of barium to stricture formation in the lower part of the œsophagus. Histologically the picture is one of sclerosis of the connective tissues. The submucosa is infiltrated with round cells, and there is well-marked perivascular infiltration, with fragmentation of the elastic fibres and atrophy of the muscularis. Finally, Olsen et al. (1945) comment that œsophageal disturbances are extremely rare in patients exhibiting the Raynaud syndrome alone. Lindsay et al. (1943) have described œsophageal changes in scleroderma resembling those described by Olsen et al. (1945) in acrosclerosis.

Changes in Muscle

These are well known in scleroderma but are regarded as inconstant in acrosclerosis (O'Leary 1943). O'Leary and Waisman (1943) described interstitial inflammation and homogenisation of muscle bundles. The histological picture in cases which show muscle involvement is similar to that found in generalised scleroderma, and has been fully described by Freudenthal (1940); it includes œdema, hyalinisation of fibres, abnormal staining reactions, and loss or blurring of cross-striations. The nuclei are often increased in number and are characteristically arranged in longitudinal rows along the sarcolemma (Freudenthal 1940). Infiltration is variable; when it occurs the cells are mononuclears—usually lymphocytes—with occasional plasma cells. Occasionally the lymphocytes aggregate together, and these little colonies are called "lymphorrhages." These lesions were first described by Weigert (1901) in myasthenia gravis. Buzzard (1905) suggested the term "lymphorrhage" because the lymphocytic aggregations resemble capillary diapedesis of red blood-cells. Dudgeon and Urquhart (1926) have described these lymphocytic infiltrations in

scleroderma. Since germ centres are present, these "lymphorrhages" are thought by some workers to represent aberrant lymphatic tissue because of their high degree of differentiation.

Changes in Lungs

Very rarely there are cystic changes in the lungs in scleroderma and acrosclerosis. These cysts vary in size and may be found towards the periphery of the lung, away from the hilum; they are multiple, close together, and supported by narrow septa. These changes are summarised by Dostrovsky (1947) as a sclerotic change in the lungs, followed by dissolution of the alveoli, with cyst formation.

CASE-RECORD

A childless married woman, aged 46, was first seen in January, 1947, with about a year's history of typical Raynaud phenomena. Before this she had always enjoyed good health. There was nothing relevant in her family history. The Raynaud attacks were aggravated by exposure to cold, but they also occurred spontaneously, and during an attack the finger-tips of both hands became cyanosed and numb. The cyanosis began as a light bluish tint, later became a deeper blue, and gradually spread proximally towards the base of the fingers. The condition subsided after a few minutes, and the colour of the skin became normal. About a year after the onset of the Raynaud attacks the patient had noticed the onset of stiffness in the fingers and hands. There had been no arthralgia, but the patient had speedily become incapable of moving her fingers or wrists. Within a month the skin of her face, neck, and hands had become coppery and, as this pigmentation had subsided, all these areas had become sclerotic. Lastly the feet had become affected, but never to the same extent as the other parts.

On admission in February, 1947, the skin over the wrists, hands, and fingers was thin, smooth, shiny, and tense. The fingers and wrists were rigid, the fingers being held in a position of semi-flexion, and there was slight ulnar deviation at the wrists. It was impossible to pinch up a fold of skin between the finger and thumb, and the affected skin, traced up the arm, gradually merged into normal skin in the region of the elbows. Frequent Raynaud phenomena were noted. The facies was typical of the condition. The skin was involved to a level just covering the shoulders and beneath both clavicles, and then it merged almost imperceptibly with more normal skin. Similar, but less severe, changes were present in both lower extremities, and limited movement was present at both ankle-joints. Increased pigmentation of patchy distribution on the neck and on the dorsum of wrists and hands was noted. The blood-pressure was 108/65 mm. Hg, but no gross abnormality was detected in the respiratory, alimentary, or central nervous systems.

Investigations.—A blood-count and the erythrocyte-sedimentation rate (E.S.R.) were normal. The blood-uric-acid level was 2 mg. per 100 ml. and blood-calcium level 10·5 mg. per 100 ml. Radiography revealed no evidence of pulmonary disease, and there were no visible cervical ribs. Radiograms of the hands showed sclerosis of the tips of the terminal phalanges, thought to be due to impaired blood-supply.

Treatment.—In view of the Raynaud phenomena, sympathectomy was considered, and the patient was seen in consultation with Mr. J. Bagot Oldham, who reported: "I am very doubtful about the advisability of sympathectomy here, because sclerodactyly is well marked, and this condition is not benefited by sympathectomy. I might try the effect of a paravertebral block; but, unless its result is very striking, I am opposed to any operation." In view of these findings, the patient was discharged from hospital, the treatment advised being physiotherapy, and thyroid extract by mouth. This treatment was continued for some months, without any material benefit to the patient, and she subsequently discontinued her attendance at the hospital and was not seen again until November, 1948.

On examination in November, 1948, there was no significant change in her condition, but she had become very distressed owing to her inability to perform any useful tasks.

Readmission.—She was readmitted in March, 1949, the physical signs being the same as on her previous examination. A new feature, not noted on her previous admission, was the appearance of scars due to ulceration of the skin on the fingers. Apart from these trophic changes the fingers were cylindrical and tapering at their tips, and were still held rigidly in a position of semi-flexion, the extremities being cold and sweating.

Investigations.—A Wassermann reaction was negative. A blood-count showed slight hypochromic anæmia but no other abnormality. The blood-calcium level was 8·6 mg. per 100 ml.; serum-potassium 18·5 mg. per 100 ml., serum-sodium 294 mg. per 100 ml., and blood-urea 22 mg. per 100 ml. The Kepler factor was 33, suggesting that the patient had not got Addison's disease. Plasma-protein levels, albumin-globulin ratio, E.S.R., and urine were normal. A fractional test-meal showed hypochlorhydria. Electrocardiography was normal. Radiography of the chest showed no evidence of pulmonary disease, no cystic changes, and a normal cardiac outline. After a barium swallow there was delay in passage of the barium through the œsophagus, but contractions were visible at all levels. Radiography of the soft tissues showed no evidence of calcinosis, and of the wrists showed decalcification of bones only.

Biopsy.—Skin showed atrophy of the epithelium, with flattening and diminution in number of the rete pegs (papillæ). Some of the small blood-vessels in the corium showed scanty perivascular lymphocytic infiltration. Subcutaneous fat was practically absent, and the glands were compressed by sclerosis of the fibrous connective tissue. Muscle showed non-specific changes only.

Treatment.—The patient's repeated requests for treatment presented a difficult problem. On rather empirical grounds, but supported by the low serum-calcium levels, she was given calciferol 100,000 units daily, together with physiotherapy, including inunction with bland oils. One treatment with thorium X was given to the fingers. This caused slight reddening of the skin, but neither the calciferol (which subsequently raised the serum-calcium level to 9·8 mg. per 100 ml.) nor the thorium X produced any recognisable improvement.

DIFFERENTIAL DIAGNOSIS

The earliest manifestations of acrosclerosis are the Raynaud phenomena, and until the skin changes appear the diagnosis of acrosclerosis does not arise. Superficial examination may lead to a momentary confusion with rheumatoid arthritis. Raynaud phenomena are seen in both conditions, and the ulnar deviation and position of flexion of the fingers are common to both. Closer examination confirms, however, that the changes are not primarily articular or periarticular, and any deformities that have arisen are due to the contraction of the skin over the underlying tissues. In this way an entire limb may shrink in volume.

Finally, acrosclerosis should be differentiated from diffuse progressive scleroderma (O'Leary and Waisman 1943) and poikilodermatomyositis (Bamber 1936). The salient points of difference between these four diseases are as follows:

Acrosclerosis

(1) Occurs predominantly in females; never attacks children.
(2) Is always confined to the extremities and face, and characterised by slow course and tendency to regress.
(3) Vasomotor phenomena are a prominent accompanying feature.
(4) Trophic changes in distal phalanges and ulceration of skin are common.
(5) Much muscle wasting and weakness uncommon.

Diffuse progressive scleroderma

(1) Occurs equally in both sexes; may occur in children.
(2) Often starts on the trunk, and the whole body may be affected within three years.
(3) Vasomotor phenomena insignificant.
(4) Trophic changes inconstant.
(5) Much muscle wasting and weakness may occur.

Poikilodermatomyositis

(1) Occurs in both sexes; may occur in children.
(2) Whole body may be affected; may run a rapid course.
(3) Vasomotor phenomena, especially in early stages of the disease, inconstant.
(4) Trophic changes in distal phalanges uncommon.
(5) Much weakness and muscle wasting are a feature of the disease.

Rheumatoid arthritis

(1) Predominates in females; may occur in children.
(2) Affects the joints rather than the skin, but can produce total immobilisation within three years.
(3) Vasomotor phenomena inconstant.
(4) Trophic changes uncommon.
(5) Weakness and muscle-wasting are common.

ÆTIOLOGY

Autonomic Nervous System

The vasomotor phenomena, together with the œsophageal dysfunction, have led many workers to discuss the autonomic nervous system as a factor in the cause of acrosclerosis (O'Leary and Waisman 1943, Olsen et al. 1945, Castle 1923, Leriche et al. 1937, Sequeira 1916, Robinson 1917). In support of this hypothesis is the occurrence of tachycardia, sweating, and trophic changes. Collier and Wilson (1913) found that the cells of the intermediolateral tract were undergoing degeneration, and it is from these cells that the sympathetic fibres arise. Knapp (1911) reports lesions in the anterior horn of the spinal cord, and Howell (1914) points out that the distribution of the lesions tends to be segmental; the bilateral symmetry of the lesions is particularly noticeable in acrosclerosis.

Endocrine System

Dysfunction of the ductless glands has long been associated with sclerodermatous changes in the integument. "Lymphorrhages" and atrophy of muscle-fibres are found in thyrotoxicosis and myasthenia gravis. Circumscribed scleroderma has been associated with both exophthalmic goitre and myxœdema (Sequeira 1916). The thyroid gland varies enormously in different cases, but thryoid atrophy appears more common than hypertrophy. Cases are on record in which Addison's disease and acromegaly have occurred in patients also presenting sclerodermatous skin lesions. Osler (1898) found treatment with thyroid extract in no way specific and giving no real benefit to the patient. Trauma, mental shock, and infectious disease have all been incriminated as the cause of sclerodermatous skin changes. The parathyroid glands have also been under suspicion (Cornbleet and Struck 1937), and Selye (1932) has produced scleroderma-like lesions in young rats by injecting parathyroid extract. In man calcium is apparently mobilised from the bones and deposited in the soft tissues, and hypocalcæmia may ensue.

A widespread endarteritis has been held to be responsible for the skin lesions, emphasis being laid on the changes in the digital arteries in the accompanying Raynaud syndrome. It should be recalled, however, that œsophageal disturbances and scleroderma-like skin lesions are never found in a pure Raynaud syndrome; the skin over the fingers may ulcerate and be ischæmic, but the changes of acrosclerosis are not seen.

Castle (1923) considered that the essential underlying cause was a combination of a disordered function of the internal secretory glands and an affection of the nervous system. He felt that the balance between the different members of the endocrine system was so delicate that, if any particular gland failed, the remainder acted so as to minimise that failure. He was therefore of the opinion that it was impossible to fix the responsibility for scleroderma and acrosclerosis on any one gland.

We are of the opinion that, of the ductless glands, the suprarenal is the one that falls chiefly under suspicion. Hyperpigmentation is an almost constant accompaniment of acrosclerosis and scleroderma. Winfield (1904) recorded two cases which rapidly improved after the administration of desiccated adrenal gland. Barlow (1939) reported a case of scleroderma associated with adrenal neoplasm.

There is an important interrelation between the sympathetic nervous system and the ductless glands. The connecting link is the chromaffin tissue, which is widely distributed in the medulla of the suprarenals, sympathetic ganglia and plexuses, ovaries, &c. This chromaffin system is intimately related to the sympathetic system in embryological derivation and location (Foerster 1916). The medulla represents about 10% of the total volume of each suprarenal gland, and is derived, in common with the ganglia of the sympathetic, from the neural tube in early embryonic life. It is thus epiblastic in origin, and is intimately related to the sympathetic nervous structures (McEwen 1916). The cortex, which forms 90% of the volume of each suprarenal gland, is mesoblastic, springing from the genital ridge and therefore having a common origin with the sex glands. When one considers the considerable vasomotor instability in cases of hyperthyroidism, the frequent onset of acrosclerosis and scleroderma in females approaching the menopause, and the fact that menstruation may be arrested coincidentally with the appearance of such skin lesions, one can appreciate why Castle (1923) put forward the belief that it is difficult to pin the responsibility for this disease on any single ductless gland.

The suprarenal glands are well known to be concerned with the metabolism of salt and water, and it is worth while recalling that the earliest histological feature of acrosclerosis is œdema, swelling up and separating the collagen bundles and fibrils. Again, clinically, the skin changes of scleroderma are often preceded by œdema, which, as it subsides, heralds the onset of the characteristic "hide-bound" skin. Further, the suprarenals are linked closely with the sex glands; cessation of menstruation and other sexual changes occur in suprarenal virilism. The connecting link between the suprarenals and the sympathetic nervous system is their common origin from the neural tube in early embryonic life.

We are therefore of the opinion that dysfunction of the suprarenal glands is the chief ætiological factor in the pathogenesis of acrosclerosis. The autonomic imbalance, hyperpigmentation, œdema, sex-incidence, and associated sexual disturbances—e.g., menstrual—can be explained fairly satisfactorily on this hypothesis, which links up with the ideas of earlier workers that the autonomic nervous system and the ductless glands are in some way responsible for the pathology of acrosclerosis.

TREATMENT

There is no satisfactory treatment for acrosclerosis. As noted above, acrosclerosis may partly regress, even after many years. On general principles most workers recommend residence in a dry and equable climate, and a well-balanced nutritious diet. Protection of the fingers from trauma, including immersion in cold water, and the avoidance of psychological trauma are also advised. Physiotherapy is important; radiant heat and massage, together with active and passive movements, encourage the patient and should be tried in all cases.

Surgical Treatment

This has been described by Leriche et al. (1937), who have published their results with both sympathectomy and parathyroidectomy. Their treatment by sympathectomy follows work done by Brown and O'Leary (1930), who studied microscopically the capillaries in the nail beds in acrosclerosis. These workers concluded that there is a significant sympathetic hypertonia of the vessels in acrosclerosis. Of 13 cases described by Leriche et al. (1937), 5 were much improved and 4 somewhat improved. They make it clear that the greatest improvement is to be expected in cases with antecedent Raynaud attacks and in which this phenomenon is a dominant feature.

Because certain patients with acrosclerosis have hypercalcæmia, the same workers tried the effect of parathyroidectomy in selected cases. Selye (1932) has shown that the injection of young rats with parathyroid hormone produces a thickening of the skin similar to scleroderma. Osteoporosis, calcinosis, hypotonia, and asthenia are said to be due to the hypercalcæmia in

acrosclerosis. Of another 13 patients subjected to parathyroidectomy 5 showed much improvement and 7 moderate improvement.

Opotherapy

Thyroid extract (Robinson 1917), pituitary (Oliver and Lerman 1936), and suprarenal extracts have also been widely used in the treatment of acrosclerosis.

Thyroid extract has long been used, although many workers, including Osler (1898) and Sequeira (1916), have been unable to benefit their patients by this means. Since both hyperthyroidism and myxœdema have been recorded coincidentally with sclerodermatous skin lesions, it is difficult to postulate the effect of thyroid extract on the course of acrosclerosis.

Winfield (1904) described much improvement in a single case given suprarenal extract, and Schwartz (1917) treated 6 cases with pituitary extract and reported improvement in all.

Miscellaneous

Gold, anti-histamine drugs—e.g., 'Benadryl'—neostigmine methyl sulphate, T.A.B. vaccine, thorium X, and calciferol have all been advocated but are only palliative. Dysphagia due to œsophageal involvement may be relieved by the passage of sounds.

SUMMARY

Acrosclerosis is defined, and its characteristic features are outlined.

The literature is reviewed, and a further case reported.

The ætiology is discussed, with special reference to the suprarenal glands. It is suggested that these glands may ultimately be directly concerned in the pathogenesis of acrosclerosis.

Treatment, both medical and surgical, is briefly surveyed.

We wish to thank Dr. Leslie Cunningham, senior physician to the Birkenhead General Hospital, for permission to publish this case.

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EFFECT OF IMPLANTATION OF TABLETS OF INSULIN ON NORMAL AND ALLOXAN-DIABETIC RABBITS

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THE present practice of giving insulin by injection has many obvious disadvantages, and alternate routes of administration have been repeatedly investigated. The introduction of long-acting protamine insulin by Hagedorn et al. (1936) has helped to achieve a better control in many diabetic patients, without, however, solving the problem of the daily injections. Oral, intranasal, rectal, and vaginal routes, as well as subcutaneous implantation of pellets, have all been tried from time to time but have been abandoned because the insulin effect was either absent or inconstant and unreliable. However, Vargas (1949) claims that tablets or pellets of protamine-zinc insulin (P.Z.I.), either alone or mixed with equal quantities of cholesterol, act for a long time when implanted subcutaneously.

We report here experiments made to test the effectiveness of subcutaneous implants of pellets prepared according to the directions of Vargas (1949) and of two other similar types of pellets, prepared from P.Z.I. and neutral P.Z.I. (Kirkpatrick 1949). The criteria of activity were the effects on the blood-sugar level of normal and alloxan-diabetic rabbits and on the glycosuria of the diabetic rabbits.

METHOD

Animals

Rabbits * were rendered diabetic (Duffy 1945) by giving them alloxan 200 mg. per kg. of body-weight in a 4% solution intravenously, the solution being neutralised with sodium hydroxide immediately before use. A 5% glucose drink was offered for the subsequent two days and given by stomach-tube if hypoglycæmic symptoms were noted. The subsequent progress of the rabbits was studied by estimation of body-weight, blood-sugar level, urinary excretion of sugar, and amount of urine excreted per twenty-four hours. After four days 2·5–7·5 units of P.Z.I. was injected to prevent acidosis, maintain nutrition, and keep the urinary loss of sugar at less than 10 g. per day. At intervals this insulin was omitted, to assess the severity of the diabetes. Both the extent of the uncontrolled glycosuria and the insulin requirements remained fairly stable from three weeks after the administration of alloxan.

Preparation of Tablets

(1) Tablets of equal quantities of P.Z.I. and cholesterol estimated to contain 500 and 1000 units of P.Z.I. were prepared for us under aseptic conditions by Burroughs Wellcome & Co. according to the directions of Vargas (1949).

(2) Two tablets of P.Z.I. mixed with calcium carbonate were made by us in a hand tableting machine lent by Burroughs Wellcome & Co. The P.Z.I. powder was obtained by centrifuging commercial P.Z.I., passing the product through alcohol and acetone, and drying it in a vacuum desiccator over phosphorus pentoxide. 20 mg. of powder, the whole from a solution of 400 unit strength, was used for each tablet, mixed with 100 mg. of calcium carbonate.

(3) Tablets of neutral P.Z.I. estimated to contain 500 and 1000 units of insulin, and tablets of equal quantities of neutral P.Z.I. and cholesterol estimated to contain 1000 units of insulin each were prepared for us by Messrs. Boots Pure Drug Co.

* Male rabbits weighing 2000–3000 g. were used in all the experiments and kept in metabolic cages. They were fed on a standard diet of oats 60 g. and bran 60 g. moistened with water 200 ml., green cabbage-leaves 60 g., and carrots 100 g. daily. They were allowed water ad lib. Rejected food was removed and measured at 6 P.M. each evening. Fasting blood-sugar levels were obtained before feeding at 10 A.M. The fasting blood-sugar levels of normal rabbits under these conditions were 91·7–S.D. 18·7 mg. per 100 ml. (range 56–127 mg. per 100 ml. in 36 observations).

TABLE I—EFFECT OF P.Z.I.-CHOLESTEROL IMPLANTS ON FASTING BLOOD-SUGAR OF NORMAL RABBITS

Insulin given	None	P.Z.I. and cholesterol implanted	Daily injections of P.Z.I. (2·0–4·2 units)	None	P.Z.I. and cholesterol implanted
Fasting blood-sugar (mg. per 100 ml.) (mean S.D. or range)	91·7 ± 18·7	87·5 ± 18·8	43·7	74·8 (56–97)	72·9 (50–100)
No. of rabbits	30	9	3	3	5
No. of observations	56	55	5	5	10
Duration of fast	12 hours			40 hours	

Implantation

A small area on the flank of the rabbit was shaved, and an incision was made about 0·5 cm. long. With sinus forceps the space between the skin and subcutaneous tissue was opened, and a tablet was dropped in. In a similar way implantation into the abdominal wall was carried out, and on two occasions into the peritoneal cavity and into muscle. The wound was closed with a single stitch. This process had remarkably little disturbing effect on the rabbits.

TABLE II—FASTING BLOOD-SUGAR LEVELS OF 3 DIABETIC RABBITS IN 3 CONSECUTIVE 5-DAY PERIODS

—	First period	Second period	Third period
Insulin given	None	P.Z.I. and cholesterol implanted	Implant plus daily injection of P.Z.I. (2 units)
Fasting blood-sugar (mg. per 100 ml.) (mean S.D.)	367 ± 52·3*	364 ± 56·5	197 ± 77·4
No. of observations	15	13	25

* Mean fasting blood-sugar of another 15 diabetic rabbits—342 ± 62·2 mg. per 100 ml. (93 observations).

Estimations

Blood-sugar levels were estimated according to the Harding modification of the Schaffer-Hartman method (King 1947) on 0·1 ml. of blood from the rabbit's ear vein. Urinary sugar was estimated by the Meyer modification of Benedict's method (King 1947) on twenty-four-hour samples of urine.

RESULTS

P.Z.I.-Cholesterol Tablets

Nine *normal rabbits* (table I) were implanted with tablets of 500–2500 units. Further implants of 500 and 1000 units were given to two of these rabbits, and the rabbit which had been given 2500 units was given 10,000 further units after ten days' observation from the initial implant. Neither in these rabbits nor in controls was any fall in fasting blood-sugar noted over periods of thirty to a hundred days. By contrast, daily injection of P.Z.I. solution of 2–4·2 units of P.Z.I. per kg. of body-weight about halved the fasting blood-sugar.

Tablets of 500, 1000, and 1500 units were implanted in three *diabetic rabbits* (table II) thirteen days after withdrawal of their maintaining daily insulin injections of 2·5–5·0 units. The 1000 and 1500 unit tablets should, according to Vargas, provide absorption equivalent to more than any of the maintaining doses. After five days without apparent response daily injections were resumed, and an immediate effect was observed on the glycosuria and fasting blood-sugar levels (fig. 1).

Of the 26 tablets used, 21 were recovered apparently intact three months after implantation. Their weight was found comparable with that of unimplanted tablets (table III). An acid saline extract of one of these tablets crushed lowered the rabbit's blood-sugar dramatically. However, no insulin effect was demonstrable after implanting a crushed tablet, or after subcutaneous injection of a sterile water extract from a crushed tablet. Burroughs Wellcome & Co. assayed other tablets of the same batch and reported that three months after manufacture they still contained at least 80% of their stated insulin content. They made an acid saline extract of the tablets and assayed its effectiveness by their standard mouse convulsive procedure with comparison with a known dose of insulin.

P.Z.I. and Calcium Carbonate Tablets

Observations were made with two of these tablets estimated to contain 400 units of P.Z.I., and a control tablet of calcium carbonate of equal weight, in three diabetic rabbits. Implantation was made after twelve hours' fast, which was continued for a further seven hours. The standard régime was then resumed. The blood-sugar levels observed are shown in fig. 2. A fall is shown maintained for about four days.

Tablets of Neutral P.Z.I.

Six normal rabbits were implanted subcutaneously in the dorsal region with tablets of neutral P.Z.I. Three rabbits were implanted with 500 units, and three with 1000 units each. They were made to fast for seven hours, by which time the blood-sugar level of all of them had fallen below 30 mg. per 100 ml. One rabbit was lost at this point, but five recovered after being fed. After forty-eight hours the morning blood-sugar levels had returned to within normal limits.

Three normal rabbits were implanted with 1000 unit tablets, one intraperitoneally, one into the abdominal wall, and one intramuscularly into the thigh. Their blood-sugar levels fell to below 30 mg. in seven hours. The

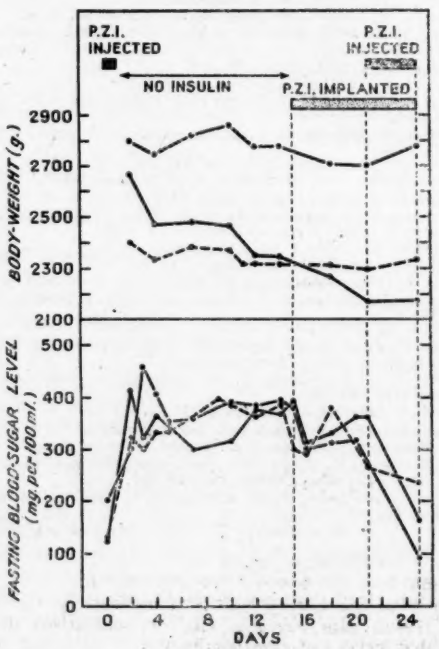

Fig. 1—Weights and fasting blood-sugar levels of three diabetic rabbits on insulin, off insulin, and after implantation of P.Z.I.-cholesterol tablets.

rabbits were then fed. The one which had had the tablet implanted into the abdominal wall died in hypoglycæmia. The other two survived, and their blood-sugar levels returned to normal in forty-eight hours.

Seven diabetic rabbits were implanted—three with 500 units each, and four with 1000 units each. There was a pronounced effect on the blood-sugar levels, which dropped to 70–130 mg. per 100 ml. within twenty-four hours, with a corresponding improvement in the glycosuria. After forty-eight hours this effect was no longer apparent.

All the tablets were removed ten days after implantation, but owing to their friable state only 3 were removed intact. These showed on weighing an average loss of 4·6 mg., equivalent to a loss of 90 units of insulin.

Histological examination of the site from which the tablets were removed confirmed the impression that these tablets had been "encapsulated." A considerable foreign-body cell reaction was found round the tablets (fig. 3).

One tablet was reimplanted into the same rabbit from which it had been removed, and it again showed a well-marked insulin effect lasting for forty-eight hours as before. Saline extracts made from other removed tablets were also found to cause hypoglycæmia.

Tablets of Neutral P.Z.I. and Cholesterol

Three diabetic rabbits were implanted with one tablet each of the mixture of neutral P.Z.I. and cholesterol estimated to contain 1000 units of insulin. After implantation the rabbits were made to fast for seven hours, by which time the blood-sugar levels of all three had

TABLE III—WEIGHT OF IMPLANTS OF P.Z.I. AND CHOLESTEROL 2 MONTHS AFTER IMPLANTATION

Tablet size	Mean initial weight of 14 implanted tablets (mg.)	Mean weight of tablets 3 months after implantation (mg.)	
500 unit	91	83·3	(7)*
1000 unit	182	182·6	(14)*

* No. of tablets.

fallen to below 80 mg. per 100 ml. The rabbits were then fed on the standard diet. Within two days the fasting blood-sugar levels were back to the original diabetic levels.

Two further implants of 1000 units each were given to these rabbits at weekly intervals, with similar transient effects.

After one to three weeks' implantation the tablets were removed and they were found to be 3–15 mg. heavier than when implanted.

Histological examination of the tablets removed showed encapsulation by a foreign-body reaction similar to that observed round the tablet of neutral P.Z.I. mentioned above.

DISCUSSION

Parkes and Young (1939) experimented with rabbits, using 5 mg. pellets of crystalline or low-zinc insulin containing 100 units each and found that they were absorbed within twenty-four hours. Mark and Biskind (1940) showed that pellets of crystalline zinc insulin with protamine effectively lowered the blood-sugar of depancreatised dogs for as long as a hundred hours. Their tablets, however, produced local reactions, and they found a great variation in the rate of absorption of insulin from the tablets. They found that the dried powder from commercial P.Z.I. was ineffective. Cutting et al. (1941), also working with depancreatised dogs, found that pellets of zinc insulin with cholesterol, and pellets of zinc insulin with cholesterol and lecithin gave up their insulin slowly for as long as thirteen days.

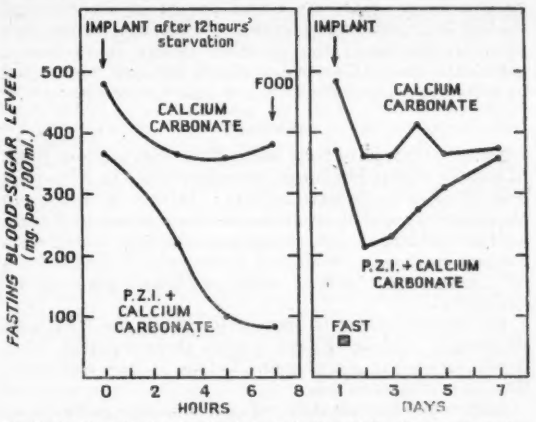

Fig. 2—Fasting blood-sugar levels in diabetic rabbits after implantation of P.Z.I. and calcium carbonate and after implantation of calcium carbonate alone.

The irregularities of absorption, however, were too great, in their opinion, to justify clinical trials of such pellets. Further experiments along the above lines were carried out by Parkes (1942) and McCullagh and Lewis (1942) confirming the above results and the fact that subcutaneous implants of insulin seemed too unreliable for clinical use.

Vargas and Koref (1949) claimed that tablets or pellets of P.Z.I., either alone or mixed with an equal quantity of cholesterol, were absorbed so slowly as to produce an insulin effect on the blood-sugar levels of normal rabbits for as long as fifty days. In alloxan-diabetic rabbits the diabetic and associated metabolic changes were said to have been controlled for about a hundred days. The same technique was then claimed to have been applied with success to human diabetes (Vargas 1949).

Such an important claim, even though it seemed to lack supporting data, nevertheless warranted testing. We implanted tablets prepared according to the directions of Vargas (1949), but found no evidence of absorption, although the amounts implanted were in some cases considerably greater than those implanted by Vargas. Our preliminary results with tablets of commerical P.Z.I. alone were not very encouraging, for though the effect lasted for several days it was entirely out of proportion to the great number of units of insulin used. Neutral P.Z.I. was next tried in view of its stability and its better solubility at the pH of the body, but we could only show evidence of adequate absorption up

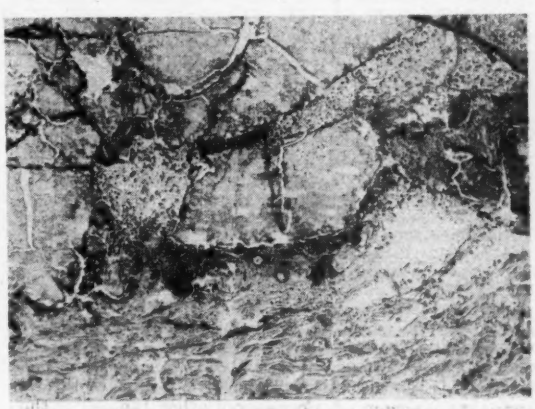

Fig. 3—Neutral P.Z.I. tablet removed ten days after implantation. The tablet is surrounded by macrophages. Note absence of new blood-vessels in surrounding tissues.

to two days. Since we found insulin in the removed tablets and histological evidence that the tablets had been encapsulated, the problem clearly is to find a sufficiently insoluble insulin which will not be treated as a foreign body. We were not able to do this.

SUMMARY

Observations have been made of the effect of four types of insulin tablets implanted subcutaneously in 39 normal and 25 alloxan-diabetic rabbits: tablets of P.Z.I. and cholesterol prepared according to the method of Vargas (1949); tablets of commercial P.Z.I. powder mixed with calcium carbonate; tablets of neutral P.Z.I.; and tablets of neutral P.Z.I. mixed with an equal quantity of cholesterol.

No metabolic effects were noted from the P.Z.I. and cholesterol tablets, whose weight three months after implantation had not altered. Vargas's (1949) claim was thus not substantiated.

After the implantation of P.Z.I. tablets containing 400 units some insulin action was noted, lasting up to four days, but less than that obtained from the daily injection of 2·5 units of P.Z.I.

An insulin action was noted from implanted tablets of neutral P.Z.I. either alone or mixed with an equal quantity of cholesterol, but lasting only for about 2 days.

Histological examination of the removed tablets showed encapsulation by a tissue reaction, which was evidently the reason for the short duration of their effects.

We wish to thank Dr. Russell Fraser for his help and advice, and Miss Shirley Looker, B.SC., for her assistance with the biochemical estimations. We are also indebted to the Diabetic Association for the grant of a Lund Research Fellowship to one of us (M. M. M.) to do this work.

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LIVER FLUKE REMOVED FROM THE HUMAN COMMON BILE-DUCT

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HUMAN infection with *Fasciola hepatica* is relatively rare. The present case seems to be the second recorded instance of removal of a liver fluke from the common bile-duct at operation.* Manson-Bahr and Walton (1941) reported the first case.

A farmer's wife, aged 64, who lived in the country between Leek and Buxton, began in 1947 to have attacks of pain in the right upper abdomen. Her doctor diagnosed subacute cholecystitis. Between these attacks she was jaundiced on three occasions without much abdominal discomfort.

Cholecystography revealed a large number of gall-stones in the gall-bladder. A blood-count showed no abnormality. Eosinophilia was 1%.

At operation in September, 1949, the gall-bladder was found to be packed with stones, the largest being about 1 in. in diameter. Cholecystectomy was performed. The common duct appeared somewhat dilated, though palpation of it revealed no stones. In view of the numerous attacks of jaundice, however, the common duct was incised to make certain that no stones were present. Immediately a flat dark object, about 1 in. long, escaped. It was picked up on the end of a glass sucker and proved to be an adult *Fasciola hepatica*. The liver was not enlarged. The common duct was washed out with sterile water, but no more liver flukes were seen. A gum-elastic bougie passed without obstruction into the duodenum. A medium-sized T-tube was left in the common duct.

Convalescence was uneventful. The bile from the T-tube and fæces were frequently examined, but no adult or immature flukes were found. The T-tube was removed at the end of three weeks. The patient has since remained in excellent health.

Dr. A. C. Hallowes, M.O.H. for Leek, has provided the following figures obtained from the local abattoir over a period of a year:

Animals inspected:	
Cattle	2359
Sheep	3498
Total	5857
Bovine livers affected either wholly or in part by liver fluke	1150
Sheep livers affected by liver fluke	392
Total	1542

Livers affected = 26·3 %

These figures reveal a relatively high proportion of infected animals in this area, and it is not surprising that a case of human infection should be encountered. Yet, so far as I can ascertain, this is the first case observed in North Staffordshire.

The source of infection in this case was probably watercress or lettuce. Beds of both exist at the patient's farm.

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* Since this note was submitted for publication a further case has been published by F. D. Murphy and K. G. Pascall (*Brit. med. J.* 1950, **i**, 647).

SUBACUTE BACTERIAL ENDOCARDITIS CAUSED BY COAGULASE-NEGATIVE STAPHYLOCOCCUS ALBUS

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COAGULASE is an enzyme, elaborated by certain potentially pathogenic organisms, which can bring about rapid clotting of blood. Its production by staphylococci is commonly employed in the laboratory to differentiate pathogenic from non-pathogenic organisms of that group.

Since at least twelve different techniques can be used to demonstrate an organism's ability to produce coagulase, it is not surprising that results vary considerably (Williams and Harper 1946). Despite this discrepancy the test is now generally regarded as the best single method of determining the pathogenicity of a staphylococcus (Cruickshank 1937, Fairbrother 1940, Jordan and Burrows 1941, Smith and Hale 1944). Topley and Wilson (1946) stated that the production of coagulase had not yet been established as a certain indicator of potential pathogenicity; but Browning and Mackie (1949) hold that one of the most constant properties of pathogenic staphylococci is their power to coagulate citrated blood.

Bacterial endocarditis is rarely caused by *Staph. albus*. An incidence of 1% is given by Thayer (1931) and Perry (1936), who do not say whether the *Staph. albus* produces coagulase or not. When it is pathogenic, that organism would be presumed to be coagulase-positive. For a coagulase-negative organism to give rise to subacute bacterial endocarditis is, though not unknown (Cunliffe and Gillam 1943), very uncommon.

Two consecutive cases of subacute bacterial endocarditis admitted to a medical charge both had a coagulase-negative *Staph. albus* as the infecting organism. They were also remarkably alike clinically. The method used for testing for coagulase was that of Fisk (1940).

FIRST CASE

A boy, aged 18, admitted to hospital on Nov. 24, 1948, gave a history of acute rheumatic fever in 1946, when he had

been off work for fourteen weeks. He had made a full subjective recovery and had been working as an electrician in the mines and playing football energetically. Three weeks before admission he had developed an "influenza"-like chill over the course of three days. This had been manifested by flitting joint pains, sore back, and pyrexia. The only other symptom has been the sudden onset of severe pain from time to time in the pulps of his fingers and toes. The acute features of the illness had only lasted three days, but had been followed by asthenia and general pallor, which had caused him to be referred to hospital for blood examination. There was no recent history of acute staphylococcal skin infection, although he had a chronic acneiform eruption of the face, shoulders, and back.

On *examination* he was a well-built pale youth with acne of the face and shoulders; pulse-rate 86; respirations 18 per min.; temperature 99·4°F; moderate clubbing of the fingers and toes; Osler's nodes in two fingers. The enlarged heart showed very free aortic regurgitation and mitral stenosis; blood-pressure 150/10 mm. Hg. The tender spleen was enlarged to two finger-breadths below the costal margin. A recent retinal hæmorrhage was evident, and red blood-cells were found in the urine. The sternum was tender. Hæmoglobin 70%, erythrocyte-sedimentation rate 40 mm. in 1 hour.

During *observation* for two weeks following admission, further pain of sudden onset in the finger pulps was complained of, and one more Osler's node appeared. Red cells were found in the urine without any casts or significant quantity of albumin. The spleen extended a further two finger-breadths below the costal margin.

Blood-cultures.—During this period, seven blood-cultures were done, and all grew a coagulase-negative *Staph. albus*, not unexpectedly reported as a contaminant. No other organisms grew; the blood was withdrawn by four different operators using different cleansing agents for the skin. Superficial and deep skin cultures did not grow organisms similar to the *Staph. albus* repeatedly isolated from the blood. However, pus from an acne pustule and blood obtained from sternal marrow puncture both gave a coagulase-negative *Staph. albus* similar, if not identical, to that obtained by blood-culture. The organism was penicillin-sensitive, with a coefficient of resistance of 1.

Serological reactions suggested that the patient's serum had a higher antibody titre for this particular *Staph. albus* than had pooled serum, and that the staphylococcus in question was more readily checked in its growth by the patient's serum than were a random selection of staphylococci.

Diagnosis and Treatment.—The clinical diagnosis of subacute bacterial endocarditis was self-evident. It was considered that seven peripheral blood-cultures and one sternal marrow blood-culture, all producing the same organism, together with the raised antibody titre, indicated that, despite the absence of coagulase production, the organism was pathogenic and had secured a hold on the heart valves. Treatment with penicillin 250,000 units three-hourly (Christie 1949) was started. Two days later the blood-culture became negative and it remained so thereafter.

The *clinical course* was not so straightforward. Three days after the start of treatment the patient complained of pain and tightness behind the sternum, spreading up to the left shoulder. The pain, persistent and crushing, was accompanied by dyspnœa and aggravated by coughing or taking a deep breath. It lasted with diminishing intensity for five days, during which time he was gravely ill. The pulse-rate rose to 120, but there was no alteration in the blood-pressure. Electrocardiographic recordings over this period suggested posterior myocardial infarction in the subepicardial layers. On the fifth day after the onset of pain, while the patient was still gravely ill, pericardial friction became audible to the left of the sternum and was soon evident all over the præcordium. With the appearance of the friction, his general condition improved, and he was soon free from pain and breathlessness and feeling stronger. As friction gave way to muffled heart sounds the improvement continued, the spleen regressed, and the amount of hæmoglobin rose by 15%. He experienced the sensation of well-being and returning strength characteristic of the successfully treated case of subacute bacterial endocarditis. On Jan. 1, 1949, the nineteenth day of penicillin therapy, he died suddenly while sitting on a bedpan.

Necropsy, carried out four hours after death, showed a much distended pericardial sac containing over 600 ml. of blood-clot and blood. The heart was opened aseptically (Green 1939), and cultures of the heart blood and valves were made. The blood was sterile, but the aortic valve yielded a coagulase-negative *Staph. albus* which proved later to be similar, if not identical, to the organism previously isolated. The grossly enlarged heart showed on naked-eye examination evidence of old-standing rheumatic aortic and mitral disease. There were also present acute rheumatic vegetations, along with further vegetations suggesting bacterial endocarditis influenced by penicillin therapy.

The spleen, weighing 700 g., was congested but showed no areas of infarction. There was no evidence of congestive heart-failure in the liver. Section of the mitral valve showed inflammatory changes characteristic of healing subacute bacterial endocarditis, together with rheumatic vegetations in which Aschoff nodules of recent formation were demonstrable. Organisms were seen beneath the fibrinous layers, but it could not be definitely determined whether they were streptococci or staphylococci. The myocardium showed a few recent Aschoff bodies in addition to numerous large areas of focal embolic myocarditis placed chiefly immediately below the epicardium. This area beneath the epicardium was extremely vascular owing to intensive organisation and formation of new blood-vessels. The age of the infarcted areas was in keeping with the clinical features. It was considered that rupture of certain of the vessels in this highly vascular area had caused the cardiac tamponade which was the immediate cause of death. Section of the kidneys showed focal embolic nephritis. Two small areas of infarction of about three and six weeks old were found in the brain.

SECOND CASE

A man, aged 41, had had rheumatic fever at puberty and sustained endocardial damage. His activities had not been restricted, and he served throughout the war at Dunkirk and the Malta siege in heavy anti-aircraft batteries. He had remained well till six weeks before admission, when he noticed he was easily tired, slightly short of breath, and experiencing chills each evening. There was associated arthralgia in several joints, with swelling and redness of the left ankle. Three weeks later he had painful pulps in two fingers, which, however, might have been traumatic. He had had no recent dental infection or attention, and no skin lesion.

On examination he was ill nourished and had a temperature of 101·6°F; pulse-rate 94; respiration 22 per min.; slight sacral œdema; moderate fresh pink clubbing of the fingers and toes; no petechiæ, and no splinter hæmorrhages. His enlarged heart showed a free aortic regurgitation, the spleen was just palpable, and there were no red cells in the urine or other evidences of embolic phenomena. The sternum was tender, electrocardiography showed left-sided hypertrophy, with a very prolonged P–R interval of 0·3 sec. The erythrocyte-sedimentation rate was 45 mm. in 1 hour, Hb 65%, blood-pressure 120/50.

Blood-culture produced coagulase-negative *Staph. albus* on five occasions in five days. No other organisms were isolated, and no similar staphylococcus was obtained from superficial or deep skin culture. The coefficient of resistance to penicillin was 1.

Diagnosis and Treatment.—The clinical diagnosis was subacute bacterial endocarditis, due to coagulase-negative *Staph. albus*. Treatment with penicillin 250,000 units three-hourly was started on the same day, because the patient was experiencing tightness in the chest, pain in the left shoulder, and breathlessness.

Course.—That evening pericardial friction was audible to the left of the sternum. Electrocardiography showed evidence of subepicardial damage on the anterior surface of the heart. After a stormy forty-eight hours, during which there was evidence of increasing congestive heart-failure and the pain and breathlessness persisted, the patient began to improve, and his symptoms lessened. Digitalis, started cautiously, had to be discontinued after forty-eight hours—6 grains of the powdered leaf had been given—owing to a great increase in the number of dropped beats and further prolongation of the P–R interval. 'Neptal' produced a good diuresis, and, as in case 1, the crisis seemed over. Cachexia was rapidly dispelled and a feeling of well-being induced, despite the persistence of pericardial friction over a wide area. Blood-cultures became negative as soon as penicillin was started. The pericardial friction disappeared after twenty-six days, its place being taken by muffled heart sounds. The spleen was no longer palpable after eighteen days' penicillin. Improvement was maintained, and œdema

was kept in abeyance with neptal 2 ml. every third day. On the thirty-fourth day after starting penicillin the patient died suddenly without warning.

Necropsy done twenty hours later showed the pericardial sac to be almost obliterated by old fibrous adhesions, but recent fibrinous pericarditis was also present. The heart was opened aseptically, and heart blood and valves were cultured. From the heart blood and the aortic valve a coagulase-negative *Staph. albus* corresponding to that previously isolated during life on blood-culture was recovered. The mitral valve showed the slight scarring of old rheumatic endocarditis. The aortic valves showed long-standing rheumatic changes and large vegetations typical of subacute bacterial endocarditis in addition to vegetations suggesting acute rheumatism. The myocardium showed no macroscopic infarction. The spleen was enlarged, weighing 440 g.

Microscopically the place of the aortic valve was largely taken by thrombotic vegetations, but a few coccal organisms were seen; their arrangement was quite haphazard, making it impossible to say whether they were staphylococci or streptococci. The mitral valve showed old rheumatic scarring but also Aschoff bodies, which were assessed as having been present for about ten weeks—the duration of the present illness. The pericardium showed low-grade non-specific subacute inflammation superimposed on old scarring. No bacteria were seen. The myocardium contained Aschoff bodies, many very old, some recent (about eight weeks old), besides very many areas of focal embolic infarction. The infarcted areas were of varying ages, from weeks to 12–24 hours; they were considered sufficiently numerous and extensive to be the cause of sudden death.

DISCUSSION

It is generally assumed that the production of coagulase indicates the pathogenicity of a staphylococcus.

Two cases of subacute bacterial endocarditis are reported in which a coagulase-negative *Staph. albus* was repeatedly isolated from the peripheral blood, and in one patient from the sternal blood. The cases demonstrated the classical features of subacute bacterial endocarditis, both clinically and post mortem. The presence of pericarditis and pericardial effusion, however, calls for comment, because pericardial symptoms and signs are uncommon in endocarditis due to *Strep. viridans*. Thayer (1931), noting pericarditis in only 5·8% of cases of subacute bacterial endocarditis, draws attention to the importance of this sign in distinguishing bacterial from rheumatic endocarditis. Pericarditis was present in 58% of his series of acute rheumatic endocarditis. Matthew and Gilchrist (1949) also found pericarditis rare in subacute bacterial endocarditis, it being absent clinically in all 40 of their cases and present post mortem, and that only to a minor degree, in but 1 of 15 cases so examined.

In the cases here reported the most striking clinical feature was pericarditis followed by pericardial effusion. The pericarditis was demonstrated post mortem not to be rheumatic or infective in origin but the result of very numerous and extensive areas of myocardial infarction in the subepicardial region.

Despite apparent improvement under penicillin therapy, both patients died after a remarkably similar clinical course. A coagulase-negative *Staph. albus* was recovered post mortem from the heart valves in each case, and organisms, possibly staphylococci, were seen in the sections of the valves.

There can be little doubt that the infecting organism in these two cases of subacute bacterial endocarditis was a *Staph. albus*, despite its inability to produce coagulase. It is therefore important that, when such an organism is repeatedly isolated from the blood of a patient suspected to have subacute bacterial endocarditis, it should not be discounted as a contaminant but regarded as the infecting organism, and its coefficient of resistance to penicillin should be estimated.

In such cases a clinical course featuring multiple myocardial infarction with subsequent pericarditis with effusion may be anticipated.

The presence of Aschoff bodies of recent formation further supports the view that subacute bacterial endocarditis is often superimposed on a valve in the presence of an active rheumatic carditis (MacIlwaine 1947, Matthew and Gilchrist 1949, Von Glahn and Pappenheimer 1935) rather than on an inactive chronic valvular lesion.

The prognostic significance of such a relation between active rheumatic carditis and the superadded infection (Matthew and Gilchrist 1949) is also borne out, a fatal issue being common where the history suggests a concomitant acute rheumatic infection.

SUMMARY

In two cases of subacute bacterial endocarditis the infecting organism was a coagulase-negative *Staph. albus*. Pericarditis was a striking feature, being produced in both cases by multiple areas of focal embolic infarction of the myocardium. The myocardial damage was sufficiently extensive to be the cause of death.

The patients were under the care of Dr. A. Rae Gilchrist, to whom thanks are expressed for guidance in the preparation of the report. The bacteriological investigations were made by Dr. T. B. M. Durie, and the autopsies by Dr. Rhaney.

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ACUTE INFECTIOUS LYMPHOCYTOSIS IN AN ADULT

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MOST hæmatological textbooks state that lymphocytosis is characteristic of lymphocytic leukæmia and infectious mononucleosis (glandular fever); it also occurs in pertussis, where it may be as high as 145,000 per c.mm. (Pearson and Newns 1937), in mumps, in some chronic forms of tuberculosis, in convalescence from infections, and in diseases of endocrine origin. In most of these conditions pathognomonic symptoms facilitate the differential diagnosis; but when they are not present lymphocytosis suggests either lymphocytic leukæmia or infectious mononucleosis.

Smith (1941) described, under the title of "acute infectious lymphocytosis," a benign condition in children, characterised by leucocytosis and a pronounced increase in the number of lymphocytes. This condition seems to be distinct from infectious mononucleosis. Wintrobe (1946) said that some 52 cases had been reported and added 2 of his own. Vomiting, irritability, fever, abdominal signs and symptoms, occasionally signs of involvement of the nervous system, and a morbilliform rash have been observed; but in many cases there have been no symptoms whatever. In Smith's 1941 experience, infection of the upper respiratory tract has been a common finding. Symptoms, when present, have not lasted more than a few days. The leucocytosis has persisted, on the other hand, for three or more weeks. Leucocyte-counts reaching 40,000 per c.mm. are common,

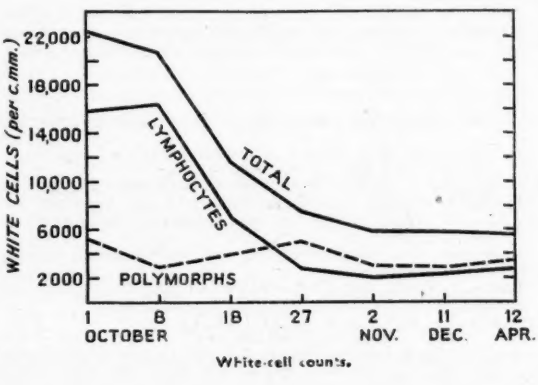
BLOOD CHANGES

Date	Red cells (million per c.mm.)	Hb (100% = 15 g.)	Colour-index	Hæmatocrit %	Mean corpuscular volume (c.μ)	Reticulocytes %	Leucocytes per c.mm.	Polymorphs %	Monocytes %	Eosinophils %	Lymphocytes %	Plasmocytes %	Basophils %
Oct. 1, 1948	4·24	80	0·94	..	..	..	22,600	24	..	2	71	..	3
Oct. 8, 1948	4·40	84	0·95	..	..	..	21,000	15	2·5	3	78·5	0·5	0·5
Oct. 18, 1948	4·25	82	0·96	40	95	7	12,000	33	3	1·5	62	..	0·5
Oct. 27, 1948	4·40	85	0·97	37	85	6	7500	53·5	6	3	36·5	0·5	0·5
Nov. 2, 1948	4·60	86	0·93	38	82	6	5600	56·5	5·5	2	35	1	..
Dec. 11, 1948	4·20	80	0·95	35·5	84	5	5700	48	11	3	38	..	..
April 12, 1949	4·38	90	1·03	..	..	..	5700	50	3	2	45	..	..
June 7, 1949	4·80	90	0·94	37	77	3	5600	50	12	2	36	..	..
Nov. 11, 1949	..	..	..	..	..	..	7000	51	4	3	42	..	..

and counts even over 100,000 per c.mm. have been reported. The great majority of the cells (60–92%) have been "adult" small lymphocytes, not unlike those seen in chronic lymphocytic leukæmia. Lymph-node enlargement and splenomegaly are generally absent. No anæmia or thrombocytopenia has been observed. Wintrobe (1946) reported that the sternal marrow, in the few cases examined, showed an increase in the percentage of the lymphocytes (30–40%), which were of normal type. The lymphocytosis in the marrow reached 86% in Duncan's (1943) case. These results were not confirmed by Lorenz et al. (1946), and Leitner (1949) thinks that some cases may have been virus pneumonias, or that the high lymphocyte percentage was due to an admixture of blood. Biopsy of the lymph-nodes revealed degeneration of the lymph follicles, with striking proliferation of the reticulo-endothelium (Smith 1944). The heterophil agglutination test has been uniformly negative. In 4 cases serological reactions were negative for lymphocytic choriomeningitis and for influenza A and B viruses. The disease seems to be both infectious and contagious, with a possible incubation period of 12–21 days. The outcome has been uniformly favourable.

Most of the cases described have been in children, and only very few were seen in young adults (Duncan 1945, Finucane and Philips 1944, Wintrobe 1946). From Greece only 1 case has been reported, in a girl aged $3^1/_2$ years (Ninios 1948).

Smith (1944) distinguishes two types of the disease: (1) acute infectious lymphocytosis, which is characterised by a transient unexpected hyperleucocytosis, with a relative and absolute lymphocytosis, and not associated with any recognisable symptoms or signs; and (2) chronic infectious lymphocytosis, a more common type which follows infections of the upper respiratory tract and is characterised by low-grade fever and often associated with symptoms, such as anorexia, pallor, tiredness, and para-umbilical pain. Smith considers that both types are separate clinical entities, although there is some evidence that they may be related. He believes that the cause is probably a virus.



White-cell counts.

We report this case of acute infectious lymphocytosis because of the difficulty in diagnosis and the uncommon age of the patient.

CASE-RECORD

A woman, aged 25, had been married in October, 1947, and delivered of a healthy girl on July 16, 1948. In the previous year, before the onset of her illness, she felt tired, which was in contrast to her usual activity. She lost her appetite and in a few months her weight fell by $1^1/_2$ st. At the end of her pregnancy it rose again to its original level.

Her mother returned from a voyage in the middle of September, 1948, and noticed that her daughter was looking pale and tired. After thorough questioning the patient mentioned slight abdominal pains on Sept. 11 and 12, and lassitude in the last few weeks. She had had no fever. After delivery she had menstruated normally on Aug. 28 and Sept. 22, 1948. The mother insisted on a medical examination. The obstetrician's findings were negative. The specialist in medicine thought that the liver was slightly enlarged. No other physical signs were detected. A blood-count on Oct. 1, 1948, showed red cells 4,240,000 per c.mm., Hb 80%, colour-index 0·94, white cells 22,600 per c.mm. (basophils 3%, eosinophils 2%, polymorphs 24%, lymphocytes 71%). Since there had been no pertussis or endocrine disease in the history, this blood-count suggested chronic lymphocytic leukæmia; so the sternal marrow was examined. On Oct. 5 it was found to be normal except for a slight increase in the proportion of lymphocytes (20%), which were mature and normal. On Oct. 6 the patient's basal metabolic rate was found to be +1%; radiography of her chest was normal, and her mediastinal lymph-glands were not enlarged.

When I saw her for the first time, on Oct. 8, she still complained of lassitude and looked pale and tired. The physical examination was negative. No enlarged lymph-glands were found. The spleen and liver were normal. There was no abdominal tenderness. Blood-pressure 120/60 mm. Hg, pulse-rate 60 per min. Weight 58·0 kg. No fever.

Investigations.—A blood-count on Oct. 8 showed red cells 4,400,000 per c.mm., Hb 84%, colour-index 0·95, white cells 21,000 per c.mm. (basophils 0·5%, eosinophils 3%, polymorphs 15%, lymphocytes 78·5%, monocytes 2·5%, plasma cells 0·5%). The lymphocytes were small adult forms, with normal nuclei and cytoplasm, 30% with azurophil granulation. On Oct. 18 the white-cell count had fallen to 12,000 per c.mm., and the lymphocytes to 62%. The lymphocytes were normal, 26% with azurophil granulation. Blood uric acid 9·7 mg. per 100 ml. Platelets 225,000 per c.mm. On Oct. 19 a sternal puncture showed bone-marrow absolutely normal with 7·5% lymphocytes. Further blood-counts are shown in the accompanying table. The erythrocyte-sedimentation rate (E.S.R.) on Nov. 2 was 10 mm. in first hour, 30 mm. in 2 hours. A Paul-Bunnel-Davidson test was negative.

Progress.—The patient left in November, 1948, for the Côte d'Azur. She felt better there, complaining occasionally of nausea. A blood-count in France showed no increase in the number of leucocytes and the proportion of mononuclear elements was only slightly above normal. She returned to Athens in December, 1948, feeling less tired.

Dec. 11: urine normal; blood-sugar 0·86 g. per 100 ml.; blood-cholesterol 1·70 g. per 100 ml.; serum-bilirubin 0·56 mg. per 100 ml., E.S.R. 5 mm. in first hour, 13 mm. in 2 hours; white cells 5700 per c.mm. (lymphocytes 38%; 35% with azurophil granulation). Dec. 23: no protozoa and no ova in stools. Dec. 24: Paul-Bunnel-Davidson test negative (limit 1/14).

Follow-up.—In a blood-count on Nov. 11, 1949, the leucocytes totalled 7000 per c.mm. (lymphocytes 42%).*

Throughout the blood examinations the lymphocytes were found normal in size and shape, with normal nuclear and cytoplasmic structure. The number of lymphocytes with azurophil granulation was always within normal limits. Erythrocytes and platelets showed no abnormal changes.

DISCUSSION

The first blood-count in the present case was done only because the patient was looking pale and complained of lassitude. At the clinical examination the findings were negative. The high leucocytosis (22,600 per c.mm.) with the high relative and absolute lymphocytosis (71%), and the absence of any history of an acute or chronic infectious disease or a disease of the endocrine glands, suggested chronic lymphocytic leukæmia. But this diagnosis was improbable because (1) the spleen and lymph-glands were not enlarged; (2) the bone-marrow contained a normal percentage of lymphocytic cells (in published reports few cases of lymphocytic leukæmia are described without a lymphocytosis in the bone-marrow); and (3) only normal adult lymphocytes were found in the peripheral blood and in the bone-marrow, without any pathological alterations of the nuclei or degeneration of the cytoplasm. Normal azurophil granulation in 26–40% of the lymphocytes is a finding which has not been reported in lymphocytic leukæmia. Naegeli (1931) had examined thousands of lymphocytes in such cases without finding any azurophil granules, except in one rather benign case where he found azurophil granules in 14% of the lymphocytes.

Infectious mononucleosis (glandular fever) was excluded because (1) all the lymphocytes were small adult forms, and (2) the clinical signs were absent.

The diagnosis of acute infectious lymphocytosis was confirmed by the progress and the further hæmatological examinations (see table and figure). In a month the leucocyte-count and the absolute and relative lymphocyte-counts were again normal.

We believe that this case belongs to the type called by Smith (1941) acute infectious lymphocytosis, where clinical pathological signs are absent and the disease starts suddenly, without prodromal symptoms. In this type the blood changes are found during a routine blood examination. This sudden discovery of the blood changes without clinical signs supports the diagnosis of acute infectious lymphocytosis.

Paul-Bunnel-Davidson tests were negative on two occasions; this result agrees with the findings of other workers. The negative Paul-Bunnel-Davidson test in acute infectious lymphocytosis makes it highly probable that this disease is a separate clinical entity and not a form of infectious mononucleosis (glandular fever).

Acute infectious lymphocytosis is usually seen in children. Our case (patient aged 25) is one of the few exceptions in young adults.

SUMMARY

Acute infectious lymphocytosis is reported in a woman aged 25. The case was characterised by a high leucocytosis and a relative and absolute lymphocytosis, with no clinical symptoms or signs (no enlargement of lymph-nodes, no splenomegaly). The differential diagnosis, especially from lymphocytic leukæmia, is discussed.

The outcome of the illness was favourable, the blood picture returning to normal in a month. The case was followed for over a year.

References at foot of next column

*In Greece lymphocytes often number 30–40% in healthy persons.

THE "DUFFY" ANTIBODY AND HÆMOPHILIA

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THE original antibody anti-Fy^a, reported by Cutbush et al. (1950), was found after a transfusion reaction in a hæmophiliac who had received previous transfusions; the second example (Ikin et al. 1950) was found in a patient with a bleeding peptic ulcer who had also had previous transfusions. Two further examples of anti-Fy^a have since been reported: in a hæmophiliac by Van Loghem and Hart (1950), and in a patient undergoing prostatectomy by Rosenfield et al. (1950).

We are now reporting this rare antibody in another hæmophilic patient, who had the following history of transfusions:

1940 and 1942: Transfused with father's blood.

1944 and 1945: Transfused with whole blood from unknown donors. (These transfusions stopped the bleeding.)

March, 1950: Transfusion with blood from a Red-Cross donor produced a reaction.

July, 1950: Infusion of fresh plasma and fibrinogen had no beneficial effect.

August, 1950: Transfusion of about 300 ml. of father's blood produced a reaction.

We were then asked to cross-match blood from our bank, and in so doing discovered anti-Fy^a in the patient's blood; this was only demonstrated by the indirect Coombs reaction. Our finding was confirmed by Dr. A. E. Mourant. The patient's genetic formula is: group O, R_1R_2 (CDe/cDE), MN, S + ve, P + ve, Lu − ve, Le^a + ve, Le^b − ve, Kell − ve. His father's is: group O, R_1R_2 (CDe/cDE), Fy^a + ve.

We have since tested eight hæmophiliacs whose names were kindly supplied by Dr. R. G. Macfarlane and Dr. C. Merskey, of Oxford, and found that three were Fy^a − ve and five Fy^a + ve; no anti-Fy^a antibodies were demonstrated.

It is recognised that numerous transfusions may lead to the production of one or more antibodies, but the fact that three of five people in whom anti-Fy^a antibodies have been reported were hæmophiliacs suggests that the relationship between this antibody and hæmophilia deserves further investigation.

We wish to thank Dr. K. E. Harris for some clinical details and Dr. M. Maizels and Dr. P. L. Mollison for providing serum for the investigation.

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SIMPLE AND RELIABLE TEST FOR BILE-PIGMENTS IN URINE

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FOR ordinary purposes the present tests for urinary bile-pigments are satisfactory, but their sensitivity is limited, so they will not detect bile in minute quantities. A simple and reliable test, sensitive enough to detect even a trace of bile-pigments, would be helpful to the clinician, especially in the investigation of possible cases of infective hepatitis. Such a test is described here. The principle of this is concentration of the bile-pigments by chromatographic adsorption in a gel mat, followed by detection of the pigments in the mat by means of a special reagent.

Stock Colloidal Solution.—Place 1000 ml. of distilled water in a 2 litre conical flask, add 50 g. of alum (ammonium), and heat gently until dissolved. Cool to about 40°C and add, little by little and shaking after each addition, 5% (*v/v*) solution of ammonium hydroxide until the contents are markedly alkaline to litmus. Then add 1% aqueous solution of alum (ammonium) until the contents are slightly acid to litmus. Allow to stand overnight. Next day, pour off most of the supernatant clear liquid, add 500 ml. of distilled water, shake well, and leave overnight. On the following day pour off about two-thirds of the supernatant clear liquid. The remaining colloidal solution is ready for use.

Reagent.—Dissolve 26 g. of trichloracetic acid in 100 ml. of distilled water and add 1 g. of pure ferric sulphate, $Fe_2(SO_4)_3$. This reagent resembles Fouchet's but contains a little more trichloracetic acid, and the use of ferric sulphate in place of the ferric chloride makes the solution colourless instead of faintly yellow. The reagent is also slightly more sensitive to bile-pigments than Fouchet's.

The Test.—Half fill a $2^1/_2$ inch ribbed glass funnel with absorbent white cotton-wool and press this down gently. Shake the stock colloidal solution, to ensure a uniform thickness, and pour some over the cotton-wool and allow it to filter through until a smooth gel mat forms on the surface of the wool. Then fill up the funnel with the urine to be tested and as the urine filters through all the pigments will be retained on the gel mat. The filtrate will be colourless if the gel mat has been properly formed and is efficient.

Now add a few drops of the reagent to the gel mat, and if even the minutest trace of bile-pigment is present the mat will turn a clear bright emerald-green which will not fade for some hours. (The reagent oxidises the bilirubin to biliverdin.) The more bile-pigment that is present the more intense will be the green colour. Quantitative estimations, if desired, can be carried out by placing standard solutions of bilirubin on other gel mats similarly constructed, adding a few drops of the reagent, and comparing the colours.

Over 300 specimens of urine containing all kinds of pigments other than bile-pigment have been tested by this method and no false-positive results have been detected. Comparison with most of the well-known tests for bile-pigments—tincture of iodine, Gmelin's nitric acid, Franke's methylene-blue, Harrison's barium chloride, Watson's modification of Harrison's, and Murray Franklin's—has shown that the test described here is much more sensitive and therefore reveals the presence of minute amounts which cannot be detected by the others.

". . . Ether is unpleasant, it is irritating, it is toxic, and it is explosive. . . . And yet ether has one supreme advantage as an anæsthetic agent—it does not depress respiration. Even though a patient may splutter and kick and get full of mucus, he still breathes. For this reason it is my firm conviction that unless a doctor makes himself familiar with the method of controlling respiration, and has available the necessary apparatus, he should not be tempted into using the new easily administered anæsthetics, and he should make old-fashioned ether the mainstay of his anæsthetic practice."—H. R. GRIFFITH, *Canad. med. Ass. J.* 1950, **63**, 533.

Medical Societies

MEDICAL SOCIETY OF LONDON

Unexpected Death Following Operation

A DISCUSSION on this subject was held on Jan. 8, with Dr. A. H. DOUTHWAITE, the president, in the chair.

Dr. I. W. MAGILL said it was essential to differentiate between death due to anæsthesia and death occurring from other causes while the patient was under the influence of, or recovering from, an anæsthetic. Modern anæsthetics had not led to a reduction in deaths under anæsthesia; but one reason for this was that with modern techniques many patients who would formerly have been considered inoperable were now given their "only chance" through surgery. A survey of 250 cases showed that abdominal surgery was the chief source of postoperative death, and as a rule more than one grave pathological condition was present. Investigation of the cause of death should be very thorough, and sometimes the anæsthetist was alone capable of giving the answer.

The volatile and gaseous anæsthetics formerly used were, in safe doses, not respiratory depressants, and their action was reversible. The modern solid anæsthetics, on the other hand, did depress respiration. With the volatile anæsthetics there was a time-lag before an overdose could be given; but when giving an intravenous injection it was fatally easy to give more than enough. Care of respiration was the first responsibility of the anæsthetist. A recent investigation of 112 cases showed an incidence of nearly 20% of regurgitation and aspiration, by which gastric contents entered the lungs; but in the hands of an experienced anæsthetist this should never happen. The endotracheal tube had proved its value. When respiration was depressed or absent, ventilation of the lungs must be taken over by the anæsthetist. Effective control, using the rebreathing bag, was easy in the operating-theatre, but care must be taken to ensure that the ventilation was adequate—in other words the young anæsthetist must be taught to concentrate on the patient. Spontaneous respiration must be restored before assistance was ended; but often it was insufficient at first and therefore there was a definite risk in the immediate postoperative period. Other conditions being satisfactory, the anæsthetist had a considerable responsibility for the postoperative state of the patient. Pulmonary embolism was preventable, and it was for the anæsthetist to ensure that the patient's posture on the operating-table was such as to ensure an unimpaired venous return. For example, accidental pressure on the calves of the legs in the Trendelenburg position might cause embolism.

The physiological balance of each individual varied, and it was essential to assess the patient's ability to withstand the anæsthetics and the surgery. During the operation wide blood-pressure variations should be avoided, and blood lost should be replaced concurrently. It was the duty of the anæsthetist to indicate the necessity for this when it arose. A recent development in surgery was deliberate lowering of the blood-pressure by giving pentamethonium iodide. Dr. Magill did not know of any fatalities from this, and it might be that the attitude towards the significance of low blood-pressure needed revision. But it seemed fair to infer that a systolic pressure of 50–60 mm. Hg did not enhance the viability of the cerebral centres.

The position of the patient after operation must be such as to ensure respiration and easy expulsion of vomitus. Dr. Magill favoured the postoperative recovery room, fully equipped and in charge of a properly qualified person, such as a registrar, to which the patient went for 24 hours. When all anæsthetics were administered by specialists, he concluded, then and only then would there be hope of further reduction in the fatality-rate.

Dr. C. KEITH SIMPSON pointed out that the coroner had a double duty. He had to see not only that the anæsthetist and surgeon were satisfied, but also that the relatives were conciliated; he was the one man—especially since the change in the administration of medicine—who stood between the public and the

ordinance of the law. The arrangement whereby the coroner ordered an investigation into the cause of any death before full recovery from an anæsthetic could be satisfactory only if the medicolegal pathologist, the anæsthetist, and the surgeon discussed the matter in detail before the post-mortem examination. The improvement in the standard of anæsthetics in the last ten years had been remarkable, and of unexpected deaths following operation 75% had little to do with the anæsthetist or the surgeon. Of course any operation (however trivial) and any anæsthetic (however well administered) were adverse factors. They could not be advantageous except in the occasional (blue) patient who was previously suboxygenated. An analysis of 500 cases showed death to be due to natural causes in 279 (56%); to operative shock—resulting from quite restrained surgery—in 149 (30%); to complications of anæsthetic risks in 40 (8%); and to overdosage or bad choice of anæsthetic in 32 (6%). In the latter classes some 85% appeared avoidable.

Death from natural causes might be due to cardio-respiratory limitations not recognised before the operation. A patient who died under a dental anæsthetic had been examined the night before; death was found to be due to a fresh thrombosis which might well have occurred during the night. Premedication must not be overlooked as a source of death, especially when it was delayed or repeated. With some anæsthetic drugs, there was clearly a risk, however skilfully they were used. The reaction to a barbiturate varied not only from one person to another but also in the same person at different times; less than 0·5 g. of thiopentone might precipitate death. Overdosage was largely a matter of the past, but even today a skilled anæsthetist might go on administering an anæsthesia causing considerable suboxia for far too long a period. Dr. Simpson quoted cases of death which had taken place when the operation was prolonged during teaching. The kind of operation most commonly responsible for death was the one undertaken to give the patient any chance of life at all or life in any tenable form. Modern intrathoracic surgery, for instance, came into this category: there was bound to be a risk of death, which would, however, be recognised by the coroner, and also by the relatives, where the facts had been explained to them.

No patient should pass out of the hands of the anæsthetist until fully recovered from the anæsthetic. Particularly dangerous was the system, still in force in some hospitals, by which a male attendant or even a porter took the patient back to the ward. Quite often a preventable death—e.g., after tonsillectomy—occurred on the way.

When fat or air embolism was overlooked as a possibility, death might be ascribed to the wrong cause. A careful necropsy technique was essential for the discovery of air embolism, and where this condition was suspected the surgeon and anæsthetist should be present and the investigation should start from the point where it was thought that the air might have entered. A cause of death which it was impossible for the pathologist to discover on his own was reflex vasovagal inhibition. This might arise from the skin; for example the stripping of a dressing might produce a fatal reflex, and this was one reason why some painful dressing should be done under anæsthesia. Other sources of reflex vasovagal inhibition were stimulation of sympathetic branches on the cardiac sheath or the aortic bodies, sudden disturbance of large masses in the abdomen, tension on the peritoneum, or urethral and other pelvic instrumentation—especially under light anæsthesia.

Dr. G. S. W. ORGANE thought it was important not to attempt too much in operations on old people.

Dr. E. B. STRAUSS reported on the electrical stimulation of respiration in patients where respiratory failure occurred during electroconvulsion therapy or during narco-analysis with barbiturates. The apparatus devised at St. Bartholomew's Hospital consisted of a box condenser with two small round electrodes of the type used in E.C.T. These were applied to the frontotemporal region, giving a steep fixed wave of current of low amperage. It was found that a current of 1–2 mA with a pulse width of 50 kilocycles, applied for 2–6 minutes, was very efficacious.

Mr. MICHAEL SMYTH said that a useful means of artificial respiration which the surgeon could adopt was to lean across the table and intermittently compress his chest against the patient's.

Mr. ZACHARY COPE had not seen a death during an operation in which there was controlled respiration; but was it possible for controlled respiration to take place for a long period without damage to the constitution of the patient?

Mr. E. W. RICHES paid tribute to the older type of anæsthetist who always visited his patient the day before operation. He agreed that a skilled attendant must accompany the patient back to the ward, and stressed the importance of proper lighting in the lift; he knew a case in which death took place simply because the lift was ill lit.

Mr. W. MCKIM MCCULLAGH said that deaths among babies born by cæsarean section under gas-and-air anæsthesia were 5%, and over half of these were healthy babies. He believed that deaths from pulmonary embolism, of which the gynæcologist saw many, could be prevented by a blood-count before the operation. If the blood state was good, there was no need for physical exercises, such as having the patient walk about the day after the operation.

Dr. T. JENNER HOSKIN said that even a person with a bad heart could stand an operation, provided the anæsthetist knew he had a bad heart to deal with.

Mr. S. M. COHEN asked whether there was such a thing as neurogenic shock under anæsthesia; or was death due to blood-loss alone? If a patient with thrombophlebitis had been put to bed, operation might precipitate a blockage; hence, if it was not possible to operate at once, it was better to postpone the operation for ten days. The same applied to fractures of the neck of the femur: it was the rule in Edinburgh to manipulate within two days or wait ten days before operating.

Mr. GUY BLACKBURN said that controlled respiration made it possible for surgery to go on into the afternoon and evening and he wondered whether that had made some surgeons a little dilatory. To reduce the incidence of unexpected deaths it was necessary to pay more attention to the preparation of the patient having an emergency operation. Curare had often been blamed for postoperative deaths, but it had enabled the surgeon to do things he could not attempt before. There was a general tendency to dispense with spinal anæsthetics because unexpected deaths were more frequent with them than with other anæsthetics.

Sir JAMES WALTON said that anæsthetics today were so complicated that no-one would dare to handle them who was not a specialist. He did not accept the contention that old people could stand operations as well as young ones. He used to tell his house-surgeons that what they had to do was to make the patient comfortable. So often, when called out, he had found the patient arrayed in tubes, and had said: "Take those things out, and let him have a night's sleep!"

The PRESIDENT thought the artificial distinction between medicine and surgery which was growing up, starting in student days, was wrong. He was quite sure that if there was closer collaboration between physicians and surgeons something could be done to reduce post-operative mortality.

Dr. MAGILL, in reply, said that if a patient did not respond to 1·5g. of thiopentone he concluded that any more would be an overdose and he had recourse to other methods. Prolongation of the operation was a cause of death, and in that respect there was a certain complacency among young surgeons. In some hospitals the bed was brought into the theatre, thus eliminating one lifting of the patient—a possible source of embolism. A competent anæsthetist always visited his patient before the operation,

or if that was not possible made an assessment on a careful report. Dr. Magill urged care in the administration of sedatives after operation. In his opinion, open ether was not "dead."

Dr. KEITH SIMPSON said he had not yet seen a death from C5 or C6. It was some twelve years since he had seen a death from "ether convulsions," possibly because of improved standards of anæsthesia. Though there was a decrease in culpable anæsthetic deaths, the number of cases succumbing was maintained by the advent of onerous new surgical procedures. The advantages of quick gentle surgery were still quite plain.

New Inventions

INSTRUMENTS FOR SUPRAPUBIC EXPOSURE OF PROSTATE AND BLADDER NECK

THE bladder retractor shown in fig. 1 (A) has a posterior blade in two parts, so that the lower half can be lengthened or shortened according to the depth of the bladder base. The extra-long posterior blade (B) is supplied for use in unusually voluminous bladders.

The prostatic-bed forceps (C) has special teeth to enable the surgeon to get a firm grip of any part of the

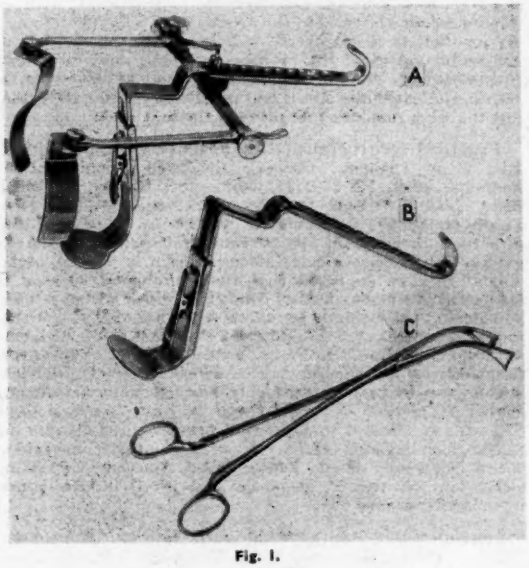


Fig. 1.

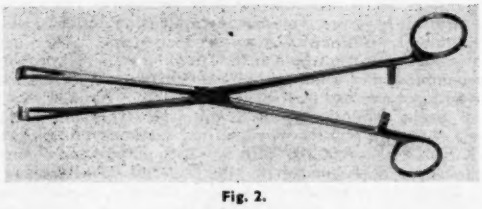


Fig. 2.

prostatic bed. After a wedge resection different parts of the raw surface can thus be brought successively into view and any spurting vessels quickly dealt with.

The bladder-neck forceps (fig. 2) has the same kind of teeth. With this instrument the posterior margin of the internal urinary meatus can be gripped and pulled firmly into view before diathermy-resection of a wide portion of a fibrosed bladder neck is undertaken.

The instruments were made to my specification by Allen & Hanburys Ltd., of London, W.1.

London, W.1. H. P. WINSBURY-WHITE, F.R.C.S.

Reviews of Books

Radiation Therapy in the Management of Cancer of the Uterine Cervix

SIMEON T. CANTRIL, M.D., director, Tumor Institute of the Swedish Hospital, Seattle, Washington. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1950. Pp. 200. 36*s*.

THIS is a thoroughly good survey of the progress and limitations of radium and X-ray therapy in treatment of carcinoma of the cervix. In the midst of an overwhelming mass of work published on this subject, it is refreshing to meet with so clear and concise an evaluation. Dr. Cantril describes the basic principles which have evolved from the Swedish and French schools of radiotherapy. Not all will agree with his statement that the great majority of cervical cancers arise in the endocervical canal; but all will share his view that from the standpoint of curability the cytological differentiation of the growth matters less than the anatomical extent of the disease when the patient is first seen. He rightly deprecates any rigid adherence to a routine method of radiation therapy. Success is achieved by building up the patient's resistance and adjusting the radiation treatment to suit the individual case. The Stockholm, Paris, and Manchester techniques are clearly described, and the section on the rôle of X rays in the treatment of carcinoma of the cervix gives much useful information on the choice of techniques, and on combinations of radium and X-ray dosage. Failures increase with the extent of the disease when treated. Parametrial spread to lymph-nodes is the main cause of failure, and presents a problem which cannot be resolved by dosage alone. Reviewing the results of surgical treatment of cervical carcinoma obtained by Fauré, Bonney, Taussig, Meigs, and others, Dr. Cantril concludes that surgery, even in the best hands, is not likely to increase the survival-rate of patients in the early clinical stage.

Radiation dosimetry in terms of "tissue dosage" was introduced by the Manchester school, and expresses tissue dose in röntgens. The tissue dose can be added at a selected point, and is contributed by both the intracavitary radium and the external X-ray therapy. Dr. Cantril compares pelvic dosimetry obtained by other techniques and points out that—though precision is the aim—accurate calculation of dosage has limitations when applied to the patient. Not only is it dangerous, but it is often futile, to push the dose in the more peripheral zones of the pelvis to a predetermined "effectual" dose. In the living subject measures are at best an estimation: precision depends upon the care with which they are made.

The Book of the It

GEORG GRODDECK. Translator: V. M. E. COLLINS. London: Vision Press. 1950. Pp. 301. 15*s*.

Exploring the Unconscious

GEORG GRODDECK. Translator: V. M. E. COLLINS. London: Vision Press. 1950. Pp. 224. 12*s*. 6*d*.

IT was nothing new in the history of medicine when Groddeck proclaimed his belief that an intangible and unknown force directs everything—physical and mental—that happens in the human individual: instead of calling this force the "It," after Nietzsche, he might have called it the Archaeus after Van Helmont, or even the entelechy after a greater predecessor. He seems, however, to have had little awareness of the strength and the weakness of his philosophical position, but to have pushed on, after his preliminary work in physiotherapy, with the application of some Freudian tenets to the explanation and treatment of physical disease. Naïve in his theorising—and bold, even for a psychoanalyst, in his use of symbolism—he went much further than Freud in attributing somatic disease to unconscious forces. "The Book of the It," here excellently translated, expounded his views in a series of letters, addressed to a sympathetic woman friend. The literary form he chose suited his thought very well: there was no need for systematic exposition or argument, and he could pile illustration on illustration, and make frequent use of the personal note. This personal note appears also, of

course, in the autobiographical fragments reproduced in *Exploring the Unconscious*; from these we learn enough to understand his violent repudiation of orthodox medical beliefs, and to recognise his lifelong anti-intellectual bias. In these and particularly in his disquisitions on the "belly-mind" he gives the English reader cause to recall D. H. Lawrence. Besides some etymological speculations, there is in *Exploring the Unconscious* a psycho-analytical examination of *The Ring*, *Faust*, and *Peer Gynt*—which is, however, less distinctive than the section on unconscious factors in organic processes. His experience here had been heartening: "I find that in obstinate organic cases of whatever nature, a psycho-analytical examination is always useful and may prove essential to improvement. . . . To the best of my judgment chronic organic disease yields to psycho-analytic treatment more surely and quickly than do the neuroses. . . ." The same, however, might be said regarding the response to non-psycho-analytical psychotherapy.

Principles and Practice of Rehabilitation

Editor: HENRY H. KESSLER, M.D., PH.D. London: Henry Kimpton. 1950. Pp. 448. 63*s*.

THE 21 authors of this book are American surgeons, physicians, and psychologists who are engaged in treating the disabled. Every branch of their vast subject is covered, and, on the whole, covered well. Apart from the surgical and medical aspect, emphasis is placed on the need for a team spirit among all who work to make the handicapped person use fully the powers he still possesses, to place him in employment, and give him independence.

The Antihistamines

Their Clinical Application. S. M. FEINBERG, M.D., associate professor in the department of allergy, Northwestern University, Chicago; SAUL MALKIEL, M.D., PH.D., assistant; R. FEINBERG, M.D., assistant. Chicago: Yearbook Publishers. 1950. Pp. 291. $4.

THIS book sets out all the known clinical uses of the anti-histamines. The experimental section has purposely been kept to a minimum, while the clinical application has been well covered. Much of the evidence that histamine plays an active part in allergic reactions is inferred. A drug which protects a guineapig from a normally lethal dose of histamine could well be called antihistaminic. In man, however, these new drugs were found to have many beneficial effects unrelated to their antihistaminic activity. The search for a new compound or a new combination of drugs which will give the minimum side-effects with the maximum benefits continues. An annual business of $100 million in America constitutes sufficient impetus for the manufacturers to look for new cold cures, new seasickness remedies, and new cures for many unrelated complaints. Written essentially for the American reading public, the book does not include all the common English names for the various compounds. Nevertheless it can be recommended to all who require a small reference work on the clinical uses of such drugs.

Treatment of Uremia by Dialysis and Other Methods with Special Regard to the Principles and Scope of Intestinal Dialysis

E. E. TWISS, physician, Municipal Hospital, Kampen, Holland. Rotterdam: Drukkerij M. Wyt & Zonen. 1950. Pp. 209.

THIS book is the third of a series, published from the Kampen Municipal Hospital, dealing with the treatment of uræmia by dialysis methods. Kolff's thesis [1] on the artificial kidney was the first, Kop's thesis [2] on peritoneal dialysis the second, and this is the third. The published work on dialysis methods in general is reviewed briefly and that on intestinal dialysis in detail. After considering the anatomy and physiology of the intestine in this context, Dr. Twiss deals with his own experiments, made on dogs, on the composition of dialysing fluids and the efficacy of dialysis through the intact intestinal wall. The technique of intestinal dialysis in humans is described, including the method in which an isolated intestinal loop is used. The results in 11 patients are evaluated.

Intestinal dialysis seems to be a practicable method of correcting many of the disturbances in uræmia, and the technique of dialysis through an isolated intestinal loop shows some promise in patients with severe and irreversible renal lesions. It is of interest that Twiss was able to keep a virtually anuric patient alive for 46 days by this method.

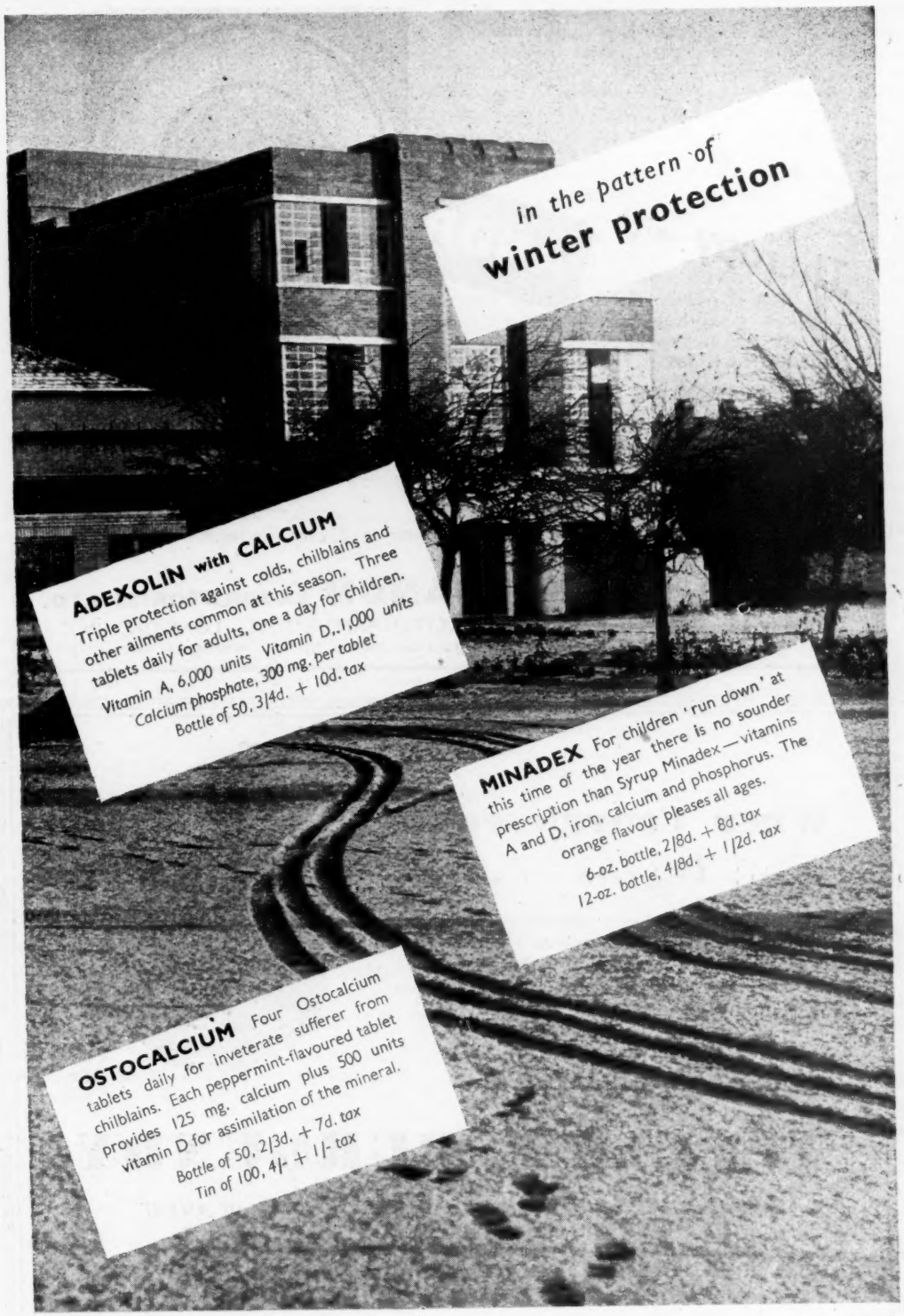
1. Kolff, W. J. Die Kunsmatige Nier. Thesis, Groningen, 1946.
2. Kop, P. S. M. Peritoneaal Dialyse. Thesis, Groningen, 1948.

My Life in Three Counties (London: Christopher Johnson. 1950. Pp. 247. 15*s*.).—Dr. Pooler's roving mind and eye find ample scope in his latest venture, and he writes in his usual straightforward and unaffected style, revealing his warmhearted humanity and wholesome sense of humour. The story of his early days in his own county of Shropshire is particularly delightful, and the numerous illustrations add a charm to the book.

Urological Surgery (2nd ed. London: Henry Kimpton. 1950. Pp. 855. £4 15*s*.).—Prof. Austin Dodson's book is already known as one of the finest expositions of operative urological surgery. Several experts in particular fields—among them Dr. Leon Howard on renal tuberculosis—have shared in this edition, and the work has benefited. Illustrations are good and clear. But, as earlier criticisms have been met, it is a reviewer's duty to offer new ones. Many would wish for a more detailed account of the operation of total cystectomy; no mention is made of the simple retropubic excision of congenital valves of the posterior urethra; and retropubic prostatectomy, despite its increasing band of adherents, is rather summarily dismissed and poorly described. Nevertheless the work maintains its place in the first rank.

Practical Neurological Diagnosis (4th ed. Springfield, Ill.: C. C. Thomas. Oxford: Blackwell Scientific Publications. 1950. Pp. 268. 37*s*. 6*d*.).—Prof. R. Glen Spurling's little book, written for neurosurgeons, naturally has many omissions disturbing to physicians. Moreover the structural divisions of the nervous system (as opposed to its function) receive greater attention than in medical texts. But it may be supposed that the neurological surgeon is interested in the diagnosis of conditions which do not require ventriculography, if only to minimise the use of that distressing aid to diagnosis. Dr. Spurling says that "lateral hemisection of the cord (Brown-Séquard syndrome) occurs most frequently as a result of stab or gunshot wounds," a view which must be based upon highly selected material. Again, the whole question of double vision as it affects neurological diagnosis is confined to 17 lines of print, while a chapter on radiological diagnosis is long, full, and excellently illustrated. There can surely be no neurosurgeon who needs such an elementary treatise on diagnosis, and yet it is clearly not intended for anyone else.

Lehrbuch der Röntgendiagnostik (5th ed. Stuttgart: Thieme. 1950. Parts 1 and 2. Pp. 426, 452. D.M. 66, 70).—Before the war this textbook in German, by H. R. Schinz and others, had a wide international circulation. It consisted of two fairly large volumes compiled by radiologists in Switzerland, Germany, Austria, Italy, and Scandinavia. During the war, the whole of the standing type was destroyed by bombing, and a number of the contributors died, so that the editors have had to start from scratch. The new edition, in 6 parts, will appear in 3 volumes. This first volume deals with the physics of radiation, methods of production of X rays, and crystallography, and with normal and abnormal radiological appearances of the skeleton. An average of $1^1/_2$ illustrations appear to a page, and the pages measure 11 × 8 in. The introductory section on the physics of radiation is unnecessary, being too advanced for the average radiologist; it might prevent him from exploring the good things to come. Every conceivable variation is described in detail and liberally illustrated with beautiful drawings and radiographs; there are 90 sketches of fractures of the humerus alone. Part 2 describes avascular necroses, inflammations, and hereditary disorders, with the same detail. The main emphasis throughout is on anatomical and pathological changes as compared with the X-ray findings. Clinical findings are not adequately correlated, but this is otherwise a superb work. The printing, the quality of paper, and the illustrations excel the best pre-war German standards.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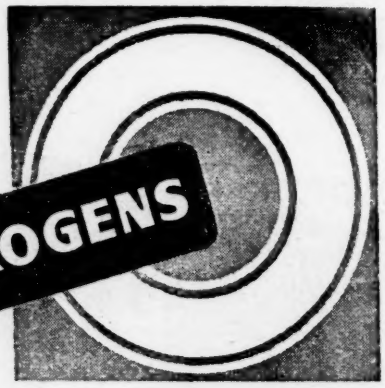

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THE LANCET
LONDON : SATURDAY, JAN. 20, 1951

Dental Ancillaries

FACED with the breakdown of the school dental service, and armed with an unexpectedly unanimous and favourable report [1] on the use of school dental nurses in New Zealand, our Government may well be inclined to create an ancillary body of dental nurses in this country. But the visiting mission agreed that the New Zealand system might need modification before it would be suitable here. As the dental and medical professions will be directly concerned with any such scheme, they should be ready to consider critically and constructively whatever version may be officially proposed.

Here in England we have so far had little experience of the work of dental ancillaries. During the war the Royal Air Force trained a few "oral hygienists" to clean and scale teeth, and 20 of these are now working for local authorities or in hospitals. Civilian training courses, lasting a year, began at the Eastman Dental Hospital in November, 1949, since when 30 students have been enrolled; and a subcommittee of the standing dental advisory committee of the Central Health Services Council is watching this experiment. The work of the New Zealand dental nurse, however, differs from that of the English oral hygienist both in scope and in responsibility. The New Zealand nurse receives two years' intensive training and becomes something of a specialist in minor dental operations for children, such as filling and simple extractions: certainly she is more experienced in this work than most recently qualified dental surgeons. On the other hand, so that she shall not feel frustrated in the day-to-day routine of children's dentistry, or feel that she has acquired knowledge she cannot use, her training is limited and practical and no attempt is made to stimulate a scientific attitude of mind. Nevertheless, when she has finished her training and is posted to a clinic in one of the six administrative districts into which New Zealand is divided, she becomes virtually an independent dental practitioner. The principal dental officer who is responsible for the dental nurses of his area has about 80 of them in his charge, and cannot closely supervise their work. In practice he seldom visits each clinic more than once in a school term, and a good deal of responsibility is thus placed on a nurse who has been deliberately trained as an ancillary worker. Many dentists who might otherwise approve of having a similar scheme for this country regard this degree of supervision as inadequate. But this is not an objection in principle to using nurses in children's dentistry, and it could be overcome by different administrative arrangements. For instance, if a qualified dentist were at the head of a team of 6 dental nurses, the situation would be very different; for their supervision would then be as close as that of students during their training in conservative dentistry in dental schools. The dental surgeon in charge of the team would examine patients, and allocate each child to one of his nurses for treatment, reserving for himself the more complex and difficult cases. He would probably give all injections for block anæsthesia, and he might have time for orthodontic treatment.

Many dentists are now deterred from entering the school dental service because so much of children's dentistry consists in repetitive routine. Many are also discouraged by a sense of helplessness in face of this colossal problem. Freed from much of the routine work by the ancillaries in his team, the dental surgeon, as MACGREGOR [2] lately suggested, could give time to the specialty for which he has been trained, and in so doing need no longer blame himself for neglecting the urgent attack upon dental caries. In the United Kingdom at present there are probably nearly 5 million children needing some form of continuous dental treatment. In New Zealand each nurse looks after 500 children; but fortunately the incidence of caries is somewhat less in Britain, and a nurse here ought to be able to look after at least 750. On this basis we should need about 6000 nurses to build up a satisfactory service. There are at present about 825 school dental officers, and with their number raised to about 1000 they could undertake the administration of the scheme and the supervision of its ancillary members. To organise and equip a children's dental team would be relatively straightforward in towns and also in those country districts where children can go to central clinics. In sparsely populated districts, where mobile units would be needed, the organisation would no doubt have to be more rudimentary; but it should be possible to provide each team with one fully equipped mobile surgery, for the use of the dental surgeon in charge, and folding chairs, foot engines, and portable cabinets of instruments for the dental nurses. When visiting an outlying village, the team might take over the village hall or transform the schoolroom into a temporary clinic, for a day or two of intensive treatment. Though perhaps not entirely satisfactory, such arrangements would be infinitely preferable to the absence of dental treatment of any kind.

The recruitment of so many dental nurses will not be easy; nor can it be done quickly. The training will be costly, and, as LITTLEFIELD [3] has pointed out, so long as facilities for training are limited, we must ponder how far it is wise to train dental nurses at the expense of fully qualified dentists. Because of these difficulties even a modified ancillary service will be a long-term remedy. But unless the dental profession accepts and uses a great deal of help, most of the children of the country can never hope for any but emergency dental treatment. Dentistry will remain a "breakdown service" destined to go on providing dentures for most of the population indefinitely.

1. See *Lancet*, 1950, ii, 491.

2. MacGregor, A. B. *Ibid*, i, 505.
3. Littlefield, W. H. *Ibid*, p. 1010.

Analgesics Compared

THE drugs used to relieve pain are of two main classes—narcotics, such as morphine, its derivatives, and the newer synthetic compounds like pethidine and amidone; and antipyretic-analgesics, which include aspirin, phenacetin, acetanilide, phenazone, and amidopyrine. In general, only a narcotic will relieve the severest pains—from a major fracture, myocardial infarction, renal or biliary colic, or inoperable malignant disease. Whereas aspirin and others of its class are often effective in other types of pain, such as headache, and especially so in "rheumatic" conditions of the muscles, fasciæ, or ligaments; their action is said to be potentiated by small amounts of codeine (as in tab. codein. co.) but accurate information on this point is scanty.

Among the narcotics morphine is still supreme, for none of its substitutes, whether built from the morphine molecule (diamorphine, codeine, dilaudid, and metapon) or synthesised on a different pattern (pethidine and amidone), has overcome its disadvantages and retained its efficacy. Pethidine is less liable than morphine to cause nausea and vomiting or constipation, and it is also the least depressant of the narcotics to respiration; hence its extensive use in obstetrics where avoidance of neonatal asphyxia is vital. But it is clearly a drug of addiction, and the same applies to other piperidine compounds, such as bemidone and particularly ketobemidone.[1] Amidone ('Physeptone,' 'Methadon,' or '10820') is much more powerful an analgesic than pethidine and even a little more potent than morphine, but it is almost as depressant to respiration as morphine and often causes nausea and vomiting if given by mouth. It has hardly any of morphine's sedative action, which is a disadvantage before operations but a valuable feature for patients who want to be relieved from chronic pain while retaining their mental clarity. It must be regarded as a drug of addiction, though withdrawal symptoms are slower to develop and less severe than with morphine. In small doses amidone effectively relieves useless coughing, and it is widely prescribed in linctus form for children with whooping-cough. The need for special precautions in prescribing pleasant-tasting syrups containing such potent drugs is well illustrated in the case reported by Dr. ROXBURGH and Dr. MUNRO-FAURE in their letter on p. 174. Here a girl of $4\frac{1}{2}$ years with whooping-cough was prescribed a proprietary linctus containing 2 mg. of physeptone, and gr. $\frac{1}{12}$ of phenobarbitone in each fluid drachm. A safe amount for her to take would have been not more than 2·4 mg. of physeptone four-hourly. But in fact, because her coughing continued, she was given 12 drachms, containing 24 mg. of physeptone and gr. 1 of phenobarbitone, over six hours. After a day's coma and two further days of somnolence the child recovered. The makers of the linctus (Messrs. Burroughs Wellcome & Co.), in a circular letter, say there have been 3 fatal cases of this kind; they therefore advise doctors prescribing for children to order not more than 2 fl. ounces of the linctus, suitably diluted, at a time and to impress on the parents or other attendants that the dose on the bottle must in no circumstances be exceeded. Phenadoxone ('Heptalgin') belongs to the same chemical group as amidone and has much the same analgesic action, though of briefer duration.

In all the modifications of the morphine molecule hitherto investigated analgesic potency runs roughly parallel with habit-formation. Thus diamorphine (heroin) is the most powerful and codeine the weakest in both respects. The same tendency is seen in the newer synthetic compounds. In 1946 GREWE[2] synthesised a new compound, containing 4 of the 5 cyclic rings present in morphine, and a derivative of this, 3-hydroxy-N-methylmorphinan hydrobromide ('Dromoran'), is a more powerful analgesic than morphine[3]; but once again it is now regarded as a potential drug of addiction.[4] One begins to wonder whether it is basically impossible to dissociate the morphine-like capacity to relieve pain from the liability to cause addiction. HARDY and his colleagues[5] suggested that morphine relieves pain in three ways:

(1) By raising the pain threshold and interfering with pain perception.

(2) By detaching pain perception from the usual reaction pattern to pain; though still perceived and recognised as such, pain now seems to be a remote happening which occasions no anxiety. This effect resembles that of leucotomy—it might even be said that morphine produces a reversible "pharmacological leucotomy."

3. By inducing lethargy and sleep.

The second mechanism appears to be the most important in relieving pain, and since this state of detachment may be very pleasant (euphoria) it is not surprising that predisposed people readily become morphine addicts. But does it necessarily follow that no centrally acting analgesic can possibly relieve severe pain without inducing euphoria and causing addiction? At any rate, no such drug is yet known.

The antipyretic-analgesics act quite differently from the narcotics. Presumably their antipyretic effect in feverish conditions is brought about through the temperature-regulating centre in the hypothalamus, heat-loss being increased by sweating and cutaneous vasodilatation. Their analgesic action is more difficult to explain.[6] They are usually said to depress the pain centre, but if so they must act at a different site, or by a different mechanism, from the narcotics, since they do not produce euphoria or addiction. Furthermore, morphine can be shown to increase the strength of any stimulus required to elicit pain, but it is very difficult to demonstrate that aspirin has any such action on the pain threshold. SONNENSCHEIN and IVY[7] have found that aspirin (as well as amidopyrine, acetanilide, and phenacetin) has no greater effect than lactose on the pain threshold of a tooth stimulated by an alternating current or the skin stimulated by radiant heat. COBURN[8] drew attention to the action of salicylates in reducing joint effusions in rheumatic fever; MEYER and RAGAN[9] suggested that gentisic acid, a metabolic product formed in the body from salicylates, may inhibit inflammatory processes and so relieve pain; BARBOUR and HERMANN[10] showed

1. Isbell, H. *J. Pharmacol.* 1949, **97**, 182.
2. Grewe, R. *Naturwissenschaften*, 1946, **33**, 333.
3. Zager, L. L., Sawtelle, W. W., Gross, E. G., Nagfy, S. F., Tidrick, R. T. *J. Lab. clin. Med.* 1949, **34**, 1530.
4. Isbell, H., Fraser, H. F. *J. Pharmacol.* 1950, **99** (*Pharm. Rev.* **2**), 355.
5. Hardy, J. D., Wolff, H. G., Goodell, H. *J. clin. Invest.* 1940, **19**, 649.
6. Goetzl, F. R. *Permanente Found. med. Bull.* 1946, **4**, 49. Smith, P. K. *J. Pharmacol.* 1949, **97**, part 2, 353.
7. Sonnenschein, R. R., Ivy, A. C. *Ibid*, p. 308.
8. Coburn, A. F. *Bull. Johns Hopk. Hosp.* 1943, **73**, 435.
9. Meyer, K., Ragan, C. *Science*, 1948, **108**, 281.
10. Barbour, H. G., Hermann, J. B. *J. Pharmacol.* 1921, **18**, 166.

that these drugs alter fluid and electrolyte balance so as to cause hydræmia; SONNENSCHEIN and IVY therefore suggest that the antipyretic-analgesics relieve pain through their local actions on the pathological processes causing pain. All that can yet be said is that this possibility deserves further study.

Biochemistry of Old Age

THE next major advance in human biology, comparable to the last half-century's work on nutrition, endocrinology, and infectious diseases, may well be the elucidation of the mechanisms of ageing. This is a field where even the groundwork has yet to be done. Between the fatalists who regard any attack on ageing as "against Nature" and, at the other extreme, the rejuvenation fanatics with their exaggerated claims, until lately no attempt has been made to find out what senescence is and what are its primary and subsidiary causes. One important discovery in this field could easily activate a whole new train of research. The immediate tasks for the biologist are descriptive and experimental; the geriatrician has plenty to do in applying existing medicine to old people and in remedying by exposure the disgraceful conditions under which some of them live. From the social side, much has already been achieved by the survey work of SHELDON [1] at Wolverhampton and THOMSON [2] in Birmingham. The theoretical background is still confused and confusing. It has long been suspected that the factors which limit somatic growth also play a part in the induction of ageing, and MCKAY'S [3] experimental study of growth-delay and longevity in rats fully supported this view. Useful results may come from Russian work being done at Kiev on the relation of ageing to the reticulo-endothelial system. Now that the Notre Dame laboratory has succeeded in raising germ-free mammals, it should be possible to dispose experimentally and for good and all of the bacterial-toxic theory. The endocrine approach, after being seriously discredited by over-optimism, looks far more hopeful now that it is generally agreed that no single hormone or organ is likely to provide a complete explanation of age processes as a whole.

In Birmingham an investigation now in progress is based on ALBRIGHT'S concept of a human "adrenopause"—a steadily diminishing production of adrenocortical hormones starting at various ages between 60 and 90. The idea draws support from the known decline in urinary excretion of 17-ketosteroids after the age of 50. Preliminary results published by MARSON [4] show that, among 100 women over 60 the axillary hair was absent in 40 and reduced to under fifty hairs per axilla in 87. Potassium and chloride serum-levels were normal, but half of the 57 serum-sodium estimations done were significantly low, and the range was 296–340 mg. per 100 ml., compared with the normal 320–350 mg. Insulin sensitivity was in general reduced, and both the fall and recovery of the blood-sugar levels were sluggish by comparison with younger adults. The series is too small for the findings to be more than pointers, but they confirm ALBRIGHT'S own figures and support the general hypothesis of a cessation or reduction in adrenal activity. The low levels of serum-sodium with no corresponding fall in chlorides, if the findings are confirmed, may throw new light on tissue dehydration in old age. The sodium levels again fit in with the view that the adrenal is involved in the age process. The rôle of the pituitary is not yet so clear. A.C.T.H. is a powerful inhibitor of protein synthesis, and MAYER [5] has pointed out that senescence is characteristically a "reorientation of metabolism towards nitrogen equilibrium and fat synthesis." FINDLEY [6] has suggested that decreased tissue sensitivity to pituitary stimulation is a factor in ageing, which would make the process largely peripheral. PARKHON [7] has studied the effect of thyroid on the fat-nitrogen ratio in senescence and experimental thyroidectomy. Thyroid function certainly declines with age, both clinically and as judged by I^{131} uptake,[8] and much work has lately been done on the relation between thyroid activity and atheroma, by way of the blood-level of cholesterol.

The vast mass of publications on sex-hormone effects in ageing is confusing and largely unreliable, but some tangible relation between œstrogens, androgens, and metabolic processes in senescence have emerged. It seems certain that old age is a general failure of homœostasis, though the origin of the process, and the possibility of attacking it at any one point, remain in doubt. But the term "adrenopause" is doubly unfortunate; for it suggests a landmark akin to the true menopause, rather than a gradual decline, and by emphasising the adrenal at the expense of other hormonal degenerative changes it begs a question which should at all costs be kept open. Little real progress is likely until some essential experiments on tissue biology are done which show exactly how and where the internal environment and the response of cells to it vary with age. What is needed is an extension of the brilliant work of the chemical embryologists to cover the end as well as the beginning of the growth process. This may tell us what chances there are of delaying or otherwise modifying the degenerative changes of old age.

The Displaced Registrars

THE continuing concern over the position of registrars threatened with dismissal, and of the hospitals that are to be denied their help, is reflected in a letter to an M.P. from the Secretary of State for Scotland (see p. 164) and in a memorandum by the Fellowship for Freedom in Medicine (summarised on p. 178). In the first report of the Newcastle upon Tyne Regional Hospital Board, Dr. W. G. Patterson, the senior administrative medical officer, suggests that senior-registrar posts should be tenable, on an improved salary-scale, for 6–7 years, with a promotion barrier half-way through this period; and that full consultant status should normally not be reached before the age of 35 and until twelve years after qualification. Whatever its merits in the present crisis, as a persisting feature of our hospital organisation such a scheme would have the defect of leaving the doctor until his middle thirties in ignorance of whether he was to gain a permanent hospital post. Hence we prefer the idea of establishing junior consultant posts, carrying the title of specialist, as discussed in our issue of Dec. 9.

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2. Thomson, A. P. *Proc. R. Soc. Med.* 1950, **43**, 929.
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5. Mayer, J. *Growth*, 1949, **13**, 7.
6. Findley, T. *Amer. J. Med.* 1949, **7**, 70.
7. Parkhon, C. I. *Byull. eksp. Biol. Med., Moscow*, 1946, **22**, 3.
8. Perlmutter, M. P., Riggs, D. S. *J. clin. Endocrinol.* 1949, **9**, 430.

Annotations

CHOICE OF CAUSES IN HODGKIN'S DISEASE

THE histological picture of Hodgkin's disease in the lymph-glands and other organs is more like an infectious granuloma than a neoplasm, and there have therefore been many attempts to find the infective agent. Ewing was dramatising a fairly common observation when he remarked that tuberculosis follows Hodgkin's disease like a shadow; but the evidence that Hodgkin's disease is either an atypical reaction to *Myco tuberculosis* infection or a manifestation of avian tuberculosis does not carry conviction; nor do the claims to have implicated diphtheroid or brucella organisms. In 1932 Gordon [1] demonstrated, in an extensive research, that when material from lymph-gland tissue in Hodgkin's disease was inoculated intracerebrally into rabbits they developed an encephalitic reaction leading to paralysis, ataxia, and sometimes death. Later, in these columns,[2] he identified the encephalitogenic agent as a virus and even demonstrated elementary bodies in affected cells. Unfortunately subsequent work showed that intracerebral injections of some normal tissues, such as bone-marrow and spleen, can produce the same reaction in rabbits; and eventually it became clear that the responsible agent, whether obtained from healthy tissue or from the lymph-glands in Hodgkin's disease, is derived from the eosinophil cells.[3]

The virus theory has lately been revived in Sweden, where Löfgren and Lundbäck [4] have isolated a virus from ground lymph-glands or pleural exudate in 2 out of 6 cases of Hodgkin's disease. They have also cultivated it from 1 of their 2 cases of lymphosarcoma, though only after the gland material had been stored at — 70°C for five weeks. Material from the negative cases was taken through 5 allantoic and 5 amniotic passages without result. After 3–5 egg-passages the agent developed agglutinins for the red cells of several animals, and it was shown to fix complement in the presence of serum from 2 out of 5 patients with Hodgkin's disease. This work, which follows their demonstration of a closely similar agent in sarcoidosis,[5] is still experimental and clearly requires further investigation.

A different approach has been explored by Gendel and colleagues,[6] who had noted an apparent association between Hoogkin's disease and cryptococcosis, or torulosis, a systemic infection with the fungus known as *Cryptococcus neoformans, Torula histolytica, Debaryomyces neoformans, Cry. meningitidis*, &c.[7] The infection most commonly attacks the central nervous system, though in many cases the lungs and skin are also involved. Gendel et al. have collected 163 published cases and add 2 of their own; 14 of these 165 cases (8·5%) were associated with Hodgkin's disease—a proportion unlikely to occur by chance. In 13 of the 14 cases Hodgkin's disease was diagnosed before cryptococcosis. In the 14th case, one of the new cases reported by Gendel et al., both diagnoses were made at necropsy. This patient had had Hodgkin's disease for about four years and X-ray treatment for about a year. He developed bilateral pleural effusion and ascites, with chylous fluid. He did not respond to nitrogen mustard treatment and began to complain of headache, and the cerebrospinal fluid yielded a growth of *Cry. neoformans*. The patient died, and post-mortem studies revealed cryptococcus infection in the pleural but not the peritoneal fluid; the organisms were also demonstrated in areas of cystic degeneration in the lungs, periaortic lymph-glands, spleen, brain, and elsewhere. The normal structure of the periaortic glands was replaced by pleomorphic tumour cells and hyalinised fibrosis, a picture distinct from the Hodgkin's disease areas; similar tumour-like cells were found at other sites. The most likely explanation is that Hodgkin's disease weakens the patient's resistance to infection and allows the cryptococcus to win a foothold and spread. But it is also possible that the fungus can produce a histological picture simulating Hodgkin's disease or one of the other reticuloses. This would support the view that Hodgkin's disease is a response to infection by a variety of micro-organisms.

1. Gordon, M. H. Studies on the Ætiology of Lymphadenoma (Rose Research on Lymphadenoma). Bristol, 1932.
2. *Lancet*, 1936, ii, 65.
3. McNaught, J. B. *J. Amer. med. Ass.* 1938, **111**, 1280. Edward, D. G. ff. *Lancet*, 1938, i, 936.
4. Lundbäck, H., Löfgren, S. *Acta med. scand.* 1950, **138**, 460.
5. Löfgren, S., Lundbäck, H. *Ibid*, p. 71.
6. Gendel, B. R., Ende, M., Norman, S. L. *Amer. J. Med.* 1950, 9, 343.
7. In recommending *Cryptococcus neoformans* the Medical Mycology Committee of the Medical Research Council remark that they do so without prejudice to any change of name becoming necessary later. (M.R.C. memo. no. 23. London, 1949; p. 6.

BIRTHMARKS AND MOLES

ANGIOMATOUS nævi (birthmarks) and pigmented soft nævi (moles) are by far the commonest congenital defects of the skin. Dilatations of blood and lymphatic vessels sometimes also affect the subcutis, muscles, and bones, causing enlargement of part or the whole of a limb. Rational treatment of these anomalies depends on a knowledge of their natural history, and this subject was discussed at a meeting of the section of surgery at the Royal Society of Medicine on Jan. 3, when Mr. D. N. Matthews described the following clinical types: spider nævus; neonatal staining; superficial capillary hæmangioma; port-wine stain; cavernous (mixed) hæmangioma; arterial hæmangioma; diffuse hæmangiomatous giantism; and multiple familial telangiectasia, in which lesions may also occur in internal organs and in the mucous membranes, causing epistaxis, hæmoptysis, or hæmatemesis.

The spider or stellate nævus is simply dealt with by diathermy, the galvanocautery, or electrolysis to its central vessel and any conspicuous branches. Neonatal staining clears up on its own. As for the others, the port-wine stain is usually a lifetime possession, because, unlike the superficial capillary hæmangioma or strawberry mark, it is not associated with proliferation of the endothelial cells but only with a static dilatation of the vessels in the corium. Its treatment consists either in excision and plastic repair, or in cosmetic coverage. Before deciding on surgery it is well to attempt the latter, because cosmetic technique today has reached a stage where even dark purplish stains can be rendered much less noticeable, while even after operation cosmetic assistance may still be necessary to conceal scars.

Three ways in which hæmangiomata may enlarge were mentioned by Mr. Matthews: they may grow by budding of new endothelial tissue, by canalisation of existing vasoformative tissue, or by tapping an additional blood-supply from neighbouring blood-vessels. The third method may lead to very rapid growth. Upward growth may lead to ulceration, which may be followed by fibrosis and slow healing, but often with a ring of residual hæmangioma. Growth downwards may in some cases lead to erosion of vital organs, such as the eye. Hæmorrhage following ulceration may be a serious complication with hæmangiomata mainly composed of arterial or cavernous tissue, whereas with capillary hæmangiomata it is not a serious matter. Mr. Matthews believes that spontaneous shrinkage of hæmangiomata is uncommon compared with extension—a view with which many would disagree. Fading without treatment may occur by thrombosis and infarction, or by infection, fibrosis, and strangulation. Mr. Matthews said that excised hæmangiomata may show no sign of fibrosis, and he thought this made it improbable that they often clear on their own. He did not, however, discuss their possible disappearance

by natural processes which are not yet understood. It seems significant that whereas the scars of surgical procedures and irradiation for nævi are commonly observed in later childhood and in adult life, one very rarely sees a strawberry-mark nævus after the age of five years. This suggests that spontaneous disappearance is common; for only a small proportion are excised. W. A. Lister [1] followed up many cases of this sort and noted rapid growth during the first year or so, followed by a static phase, after which the great majority began to fade and disappeared without trace before the end of the fifth year. A useful routine scheme is to measure the lesion accurately at the first attendance, or photograph it beside a rule. The mother is advised of the probable subsequent progress, disabused about folk-lore and the gratuitous advice of the woman-next-door regarding "male and female nævi," and asked to bring the child for periodical inspection. If at about eight or nine months the lesion seems to have stopped growing, it can be safely left to run its natural course. Surgical interference is necessary chiefly in the cavernous type, for hæmorrhage, rapid extension, and deep erosion; and in cases with severe disfigurement or involving the mouth, ears, or orbital or perianal regions—sites at which rapid extension and disfigurement, or interference with functions, such as deglutition, may occur.

Mr. Matthews described surgical treatment by the use of sclerosing agents, or excision, or a combination of the two methods. Sclerosing agents are effective particularly in the cavernous (mixed) type, in which this form of treatment most often becomes necessary. Suitable methods include heat, cold, irradiation, and the injection of sclerosing solutions. Diathermy is preferred to cautery. Carbon dioxide snow is used by many, but may leave a disfiguring ring of angioma around the scarred area. Mr. Matthews strongly deprecated the use of γ-irradiation for these benign lesions of childhood—an opinion which should receive wide support. Sir Stanford Cade, who presided at the R.S.M. meeting, spoke of possible stunting of limb growth from its use and said that if it was applied to the mammary region in young girls it might lead to non-development of the breast at puberty with the ugly scarring of atrophic radiodermatitis; the result might resemble that of a complete mastectomy with subsequent irradiation. The treatment of port-wine stains by γ-irradiation is also contraindicated, but α-irradiation by thorium-X paint containing 1500 electrostatic units per cubic centimetre, applied at fortnightly intervals, has been recommended as safe, and is sometimes followed by improvement in cases of nævus flammeus, where the individual vessels are not too obvious before treatment is begun. Sclerosing fluids include boiling water, 40% saline solution, and 'Ethamolin' froth. These, Mr. Matthews said, may cure or may lessen the extent of surgery afterwards necessary. The best results are obtained by first applying transparent adhesive tape under pressure over the lesion and then injecting through this. Mr. D. F. E. Nash recommended the use of an all-metal dental syringe with a fine flexible needle for easier and safer injection procedures.

Turning to moles, Mr. Matthews recommended excision in toto and grafting if necessary: sometimes only partial excision is possible and in these circumstances a central plaque graft, subsequently stretched, gives the best results. He did not deal, however, with the vexed question of the relationship of moles and malignancy. The removal of moles about the face is usually requested for cosmetic reasons, and apart from removal of the hairs by electrolysis, their simple excision gives most satisfactory results. Some believe that any handling of these lesions may initiate malignant changes, but histological findings suggest that this is unlikely, for the nævus cells are of the intradermal (resting) type. Confusion has arisen with junction (active) nævi in which the nævus cells are situated at the junction of the epidermis and the dermis. These are usually hairless, more intensely pigmented, and bluish black; and the patient may come for treatment not for cosmetic reasons but because the lesion has lately been enlarging or bleeding. In cases of this sort careless manipulation, or even a biopsy, may lead to the grim results which have placed something of a hoodoo on the treatment of moles. Nevertheless it is a wise precaution not to subject *any* mole to forceps pressure during its removal, and to refer all moles for histological study. Moreover, they should be widely and deeply excised. Probably all pigmented moles on the hands or feet, or in the axillæ or groins, ought to be excised as a prophylactic measure, because of the risks of trauma at these sites. Malignant melanomata tend to arise in the parts of the body more distant from the head, and lesions on the soles and in the paronychial regions are especially suspect, even if pigmentation is inconspicuous or absent.

1. *Lancet*, 1938, i, 1429.

CLASSIFICATION OF CANCER OF THE CERVIX

THE classification of cancer of the cervix uteri adopted by a League of Nations committee and published in 1937 was enthusiastically adopted by many countries and marked a big advance in the presentation of results of radiotherapy in this form of cancer. Indeed it gave a lead which might well be followed by all doctors seeking to evaluate the results of treatment of their patients.

The committee's aim was to provide a classification that would be accepted everywhere, so as to secure a common basis of understanding and comparison of the results obtained by radiotherapy centres throughout the world. In the United States, however, this classification of carcinoma of cervix into four well-defined stages has not been used exclusively, and at the fourth American Congress of Obstetrics and Gynæcology, held last year, an international committee was appointed to find a classification that would be acceptable to all centres treating cancer of cervix. This new committee has now recommended that the League of Nations classification of carcinoma of cervix should in all essentials be retained, with the one exception that cases of carcinoma in situ should henceforth be removed from stage I and placed in a new category, stage 0. As thus revised, the stages will be:

Stage 0.—Carcinoma in situ—also known as pre-invasive carcinoma, intra-epithelial carcinoma, and similar conditions.

Stage I.—The carcinoma is strictly confined to the cervix.

Stage II.—The carcinoma extends beyond the cervix, but has not reached the pelvic wall. The carcinoma involves the vagina, but not the lower third.

Stage III.—The carcinoma has reached the pelvic wall. (On rectal examination no "cancer-free" space is found between the tumour and the pelvic wall.) The carcinoma involves the lower third of the vagina.

Stage IV.—The carcinoma involves the bladder or the rectum, or both, or has extended beyond the limits previously described.

The committee resolved that "this Classification should be termed the International Classification of the Stages of Carcinoma of the Uterine Cervix, and that all organisations concerned with the problem on hand be approached to consider its adoption."

With the introduction of stage 0, pre-invasive or intra-epithelial carcinoma of cervix—the so-called carcinoma in situ—is placed in a stage by itself. Technically, pre-invasive carcinoma is within stage I; but its prognosis is not the same, the growth being still confined within the basement membrane and therefore likely to be much more

amenable to treatment. The usefulness of this modification in staging will largely depend on the acceptance by pathologists and other specialists of a diagnosis of cancer based on the cytological study of the cervical epithelium. This is a method of diagnosis that enjoys much popularity in America, where cancer-detection centres are widely established and great numbers of examinations by the smear technique are made in laboratories with trained staff concentrating on this study. The position in many other countries, however, is different, and this method of diagnosing cancer has so far been less generally accepted outside the U.S.A. If, with greater experience, the method becomes a routine procedure for all patients undergoing gynæcological examination, a welcome advance, not only in earlier diagnosis but also in the results of treatment, should follow. For this reason in itself, apart from the clearer basis for comparison of results of treatment offered by the addition of a stage 0, the new classification deserves adoption.

PROSPECTS IN THE TUBERCULOSIS SERVICE

PULMONARY tuberculosis still needs—and doubtless gets—more beds and more outpatient hours than any other disease; even so, it does not get enough of either. Dr. G. E. Godber, deputy chief medical officer of the Ministry of Health, remarked at a conference of the public-health section of the Royal College of Nursing, on Jan. 13, that we cannot be satisfied with conditions which do not enable us to treat the early case, or isolate the infectious case, *at once*. These, indeed, are the prime necessities in the public-health management of any infectious disease; but the difficulties of achieving them for tuberculosis are of course formidable: lack of money is possibly the chief of them, but lack of nursing staff for beds, and lack of houses also tell against the tuberculous. Probably nothing tells so heavily, however, as the awkwardness of human nature. Dr. Godber admitted, cautiously, that he did not feel sure that the chest physicians and the medical officers of health were everywhere working well together; and other speakers must have encouraged his doubts. There is much to be said for his view that the preventive aspect of tuberculosis has rightly been left in the hands of the local authorities, since the M.O.H. has our preventive machinery constantly in use under his hand. The health visitor, being primarily a dealer in prevention, has been left on his staff. But this division of responsibility is certainly giving rise to trouble in some places. Dr. Philip Ellman, who took the chair, felt strongly that the health visitor must be present when the patient is attending the clinic; but in some areas she is not allowed to attend sessions at the chest clinic or is not able to attend all sessions. She thus loses an important chance to understand the cases and keep continuous touch with them: while the chest physician loses a valuable lieutenant. A nurse sent in from the local hospital—perhaps a different nurse each week—cannot give him the same informed help as the health visitor, who knows the patient's home.

That this kind of friction is quite unnecessary was made clear by speakers from regions where collaboration between the health department and the chest clinic is good. At Southend, Dr. E. G. Sita-Lumsden said, the M.O.H., the assistant M.O.H. (who is also the school medical officer), the superintendent health visitor, the home-help supervisor, the superintendent of nursing, the chief sanitary inspector, the children's officer, and the chest physician all meet weekly to discuss the cases of tuberculosis under treatment and to arrange what each shall contribute to their care. This plan works well. The committee so formed are in touch with the housing authority and advise about patients who need rehousing, taking care to propose only those for whom a change is really necessary. Dr. Sita-Lumsden has also encouraged the general practitioners to send all suspected cases and contacts to the clinic for X-ray examination; and this has favoured early diagnosis to such an extent that a mass-radiography survey detected only a very small number of new cases. Such an example of successful collaboration may be contrasted with the experience of a sanatorium physician who said that while they had found it possible, in her area, to form good relations with the thoracic surgeons and general practitioners, they had not succeeded in interesting the medical officer of health—or indeed the entire local authority. The sanatorium of 220 beds has no almoner. Many lung resections are done there, and it has been her experience that patients who before admission had high priority for housing, after lung resection—when their need of good quarters is often very high—are taken off the priority list. This sanatorium, which employs reabled nurses, is never short of staff, and indeed sometimes has a surplus; but there is no room for more beds in the existing building. Yet there is a long list of patients awaiting admission in the region.

Dr. Marc Daniels reminded the meeting that the allocation of beds for tuberculosis in general hospitals is the one thing which can act immediately on waiting-lists. Here again progress depends on good feeling. In some places, he said, there is considerable opposition from regional hospital boards and hospital management committees. Domiciliary treatment can be successful only if the chest physician can use hospital beds for short-term measures of treatment; but these measures can be used only if they are supplemented by a good clinic service, and some of the clinics are quite inadequate. Dr. Godber mentioned a recent Ministry of Health survey, unfortunately still confidential, which has shown that "a surprisingly large number" of chest physicians now have hospital beds at their disposal—news whose value must depend on the surprise-threshold of the Ministry.

A question about the pool of infection in London's common lodging-houses brought Dr. William Hartston to his feet in defence of the London County Council. What goes on in Rowton Houses, he implied, is not the council's affair: the 200 cases in common lodging-houses, which the L.C.C. inspects, represent no more, he thinks, than the incidence in the general population. At three of the best houses (where every man has his own cubicle and can cough to his own satisfaction) the L.C.C. has arranged that cases recommended by a chest physician should have priority of admission; and that they should be allowed to lie down on their beds in the afternoons. A hostel has been opened in the country for homeless tuberculous patients who are not fit for work; and another is to be opened in London in March for working men. This is not much, but it is something. Only money—a great deal of money—can put everything right; and atthe moment we cannot afford so much. That is all the more reason for pressing forward with measures which cost nothing but good will—the allocation of beds in general hospitals, and a closer collaboration between the chest physician and the M.O.H. Whatever happens, Dr. Godber believes we should never again allow the tuberculosis service to work in isolation, out of the stream of general medicine. It offers plenty of work for everyone concerned—the chest physician, the M.O.H., the general practitioner, the health visitor—if they will agree to share it.

Dr. J. EASTMAN SHEEHAN, professor of plastic reparative surgery at New York Polyclinic Medical School, has died in New York. During the late war he worked in London for some time and he contributed to our columns papers on skin grafting and on facial paralysis.

Special Articles

THE ADRENOCORTICOTROPIC HORMONE (A.C.T.H.) OF THE PITUITARY GLAND

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THE intimate connection between the pituitary gland and the adrenal cortex was first satisfactorily demonstrated by Philip Smith in 1928–30. Using his newly developed technique of hypophysectomy in the rat, he showed that the removal of the pituitary caused a relatively rapid atrophy of the adrenal cortex, which could be repaired by transplants of anterior pituitary tissue. The active principle was later called pituitary adrenocorticotropic hormone (A.C.T.H.). Shortly after Smith's work H. M. Evans (1933) showed that pituitary extracts could also bring about adrenal repair in the hypophysectomised rat.

CHEMISTRY

Many attempts were then made to isolate the hormone; but little real progress was made until the rapid development in protein chemistry produced the modern techniques for separating and characterising proteins.

In 1943, Li, Evans, and Simpson, at Berkeley, California, working with sheep pituitaries, and Sayers, White, and Long, at Yale, using pig pituitaries, independently isolated proteins with high adrenocorticotropic potencies. These preparations, which were very similar in chemical and physical properties, seemed to be homogeneous in sedimentation, electrophoresis, and solubility studies. Their molecular weight was 20,000.

The preparation of a protein of similar biological potency from beef glands has been cited by White (1944), but no physicochemical data have been published, and efforts in the London Hospital laboratory, and in that of Dr. C. H. Li (personal communication), to isolate a homogeneous beef A.C.T.H. preparation have so far been unsuccessful.

The amounts of A.C.T.H. present in the pituitary glands of different animals vary widely. Astwood and Tyslowitz (1942) showed that pig glands contained most, sheep glands rather less, and beef glands least A.C.T.H. Sayers et al. (1949) estimated that the human pituitary may contain A.C.T.H. equivalent to 20% of the dry weight. The yields of homogeneous protein hormone obtained from animal glands have been lower than these estimates would suggest. Fishman (1947), by a modification of the earlier methods, obtained 1 g. of homogeneous protein hormone from 1 kg. of pig pituitaries (about 5000). Li et al. (1943) originally obtained 60 mg. from 1 kg. of sheep pituitaries, but Li has obtained much higher yields from these glands by a modified procedure.

Though the evidence for the homogeneity of sheep and pig protein A.C.T.H. preparations appears to be satisfactory, there is now much evidence that the active principle may be of relatively small molecular size. Li et al. (1943) reported that about 60% of the protein could be digested with pepsin without loss of biological potency. Li (1947) showed that a similar effect was observed after partial hydrolysis with hydrochloric acid, and from a study of the digestion products he concluded that the active fragment is a polypeptide with a molecular weight of about 1200.

Evidence of another type comes from ultrafiltration experiments. Anselmino et al. (1934) and Tyslowitz (1943) claimed ultrafiltration of A.C.T.H. activity through membranes impermeable to protein, but neither was able to prepare the hormone in more concentrated form.

Work at the London Hospital began in 1938 (Crooke et al. 1947). Cortis-Jones et al. (1950) have shown that by ultrafiltration of beef A.C.T.H. concentrates under suitable conditions it is possible to prepare a mixture of polypeptides which is 1·5–2·0 times as active as homogeneous pig A.C.T.H. and contains about half the biological activity initially present in pituitary glands. A polypeptide (A.C.T.P.) isolated from this mixture seems to be homogeneous and is ten times as active as homogeneous pig A.C.T.H. (Morris and Morris 1950). It thus seems certain that, unlike that of most protein hormones, the biological activity of the adrenocorticotropic protein resides in a small molecular grouping. Experiments in the London Hospital laboratory suggest that the beef and pig protein hormone molecule is made up of a group of peptides held together by relatively weak forces. This complex can be dissociated and reassociated by changes of pH and salt concentration. The variation in biological activity in A.C.T.H. from different sources, and also the fact that certain heterogeneous protein prepara ions are more active than the homogeneous protein A.C.T.H., can be explained on this basis. The active peptide seems to have all the different biological properties associated with the protein hormone.

The implications of the idea of a relatively small active grouping are very important for our understanding of the action of A.C.T.H. Since the space occupied by this group at its site of action is about the same as that occupied by many synthetic drugs, such concepts as that of competitive inhibition, which have played an important part in modern pharmacology, may also be relevant here. Work in this direction must of course await the elucidation of the amino-acid sequence in the active grouping and the determination of the chemical specificity of the biological action.

Lesh et al. (1950) have recently announced the preparation of material having 120 times the potency of Armour standard from pig pituitaries. This material had a molecular weight greater than 2500 and contained at least twelve different amino-acids. If this preliminary report is confirmed, the concept of A.C.T.H. as a component of the protein hormone of Li et al. (1943) and Sayers et al. (1943) must be abandoned.

BIO-ASSAY

Valid assays of A.C.T.H. can be made only on hypophysectomised animals in which the endogenous source of the hormone has been removed. Many erroneous reports of the presence of A.C.T.H. in blood and urine have been made through neglect of this principle. Three main methods are now generally used for bio-assay of the hormone:

(1) *Adrenal Repair.*—Hypophysectomised rats are kept for 10–14 days after operation. The adrenals then weigh 25–30% of those of controls. The material to be tested is administered in divided doses and adrenal repair estimated by increase in adrenal weight or by histological examination.

(2) *Adrenal Maintenance.*—Administration of the material to be tested is begun immediately after hypophysectomy, and the amount of test material necessary to maintain the adrenals at the normal level is estimated.

(3) *Adrenal Ascorbic-acid Depletion.*—Sayers et al. (1945) observed that injection of A.C.T.H. leads to depletion of adrenal cholesterol and ascorbic acid, and that this depletion coincides with the liberation of glucogenic hormones from the adrenal cortex. They suggested that these are synthesised from cholesterol in the adrenal cortex by some process involving ascorbic acid. Sayers et al. (1948) have used the depletion of adrenal ascorbic acid by A.C.T.H. in the hypophysectomised rat as a sensitive and specific bio-assay method for the hormone. As little as 0·5 μg. of pig A.C.T.H., or 0·05 μg. of beef A.C.T.P., produces a 20% depletion. This method is probably the best now available.

PHYSIOLOGY

The various biological effects produced by A.C.T.H. are mediated solely through the adrenal cortex. In laboratory animals adrenalectomy abolishes all these effects, and in many cases they have also been duplicated with pure adrenocortical steroids. The chief physiological actions of the hormone are :

Production of Adrenal Hypertrophy

It has been stated that the adrenals of the rat can be increased in weight from about 30 to 400 mg. by continuous intravenous infusion of A.C.T.H. Bergner and Deane (1948) show that in the rat this hypertrophy is confined mainly to the zona glomerulosa, but the existence of a species difference does not warrant the extension of this conclusion to man.

Synthesis of Adrenocortical Hormones in the Adrenal Glands

As mentioned above, injection of A.C.T.H. causes depletion of adrenal ascorbic acid and adrenal cholesterol. Sayers et al. (1943) showed that this process was accompanied by the increased deposition of liver glycogen typical of the action of adrenal glucocorticoids (" S hormones "). The characteristic decrease in the number of circulating eosinophils brought about by these substances has also been demonstrated in man, mouse, and rat after administration of A.C.T.H. Estimations of " 11-oxysteroids " (which give a rough indication of the excretion of glucosteroids) in patients receiving A.C.T.H. also confirm these conclusions. Since the administration of A.C.T.H. causes an increase in 17-ketosteroid excretion in man, it has been concluded that the hormone also stimulates production of " N " (nitrogen-retaining) hormones by the adrenals, contrary to the earlier suggestion of Fuller Albright (1947) that these substances were controlled by the pituitary luteinising hormone. However, certain glucocorticosteroids can give rise to urinary 17-ketosteroids, and as the direct effect of A.C.T.H. on the nitrogen balance in man seems to be variable, the question of production and control of " N " hormone must await further investigation. Most workers now agree that administration of A.C.T.H. in man is followed by marked retention of $Na^+ + Cl^-$, similar to that produced by deoxycortone. It may therefore be concluded that the adrenal mineralocorticoids (" Na " hormones) are also under pituitary control in man. This conclusion, however, is not valid for mouse and rat.

It will therefore be seen that all the known types of adrenocortical hormones can be produced by the adrenal glands under the action of A.C.T.H., and that the over-all effects of this hormone will depend on the ratio of the various corticoids produced by the stimulation.

Sayers and Sayers (1947) have shown that this mechanism is self-regulating; injection of certain corticoids—e.g., 'Cortisone'—inhibits production of A.C.T.H. by the pituitary. They have also shown by the adrenal ascorbic-acid depletion method that a state of stress elicits increased production of A.C.T.H. by the pituitary, and that this effect can be inhibited by injection of corticoids. This relation is quantitative, in that a severe stress necessitates a large dose of corticoids to inhibit production of A.C.T.H. The glucocorticoids—e.g., cortisone and 17-hydroxy corticosterone (Kendall's compound F)—are much more effective in this inhibition mechanism than are the mineralocorticoids. Sayers and Sayers conclude that the pituitary secretes A.C.T.H. at a rate which is adjusted to the corticoid requirements of the peripheral tissue cells. The operation of this mechanism has been reviewed by Sayers (1948).

The physiological effects produced by A.C.T.H., indirectly via the adrenocortical hormones can be summarised as :

Inhibition of Protein Synthesis

A.C.T.H. inhibits the action of the pituitary growth hormone which regulates the rate of protein synthesis in the organism with a consequent increase in the amount of amino-acids in the blood and increased excretion of nitrogen.

Increase in Rate of Gluconeogenesis

The carbon chains derived from fats and amino-acids are used in the synthesis of carbohydrates. This process is mediated by the glucocorticoids, which also increase the storage of glycogen in the liver. In rats on a high-carbohydrate diet, or with insulin-deficiency induced by alloxan, A.C.T.H. can induce glycosuria. Similar effects have been observed in persons with abnormal sugar-tolerance curves.

Involution of the Thymus Gland and Lymph-nodes

Dougherty and White (1945) have shown that involution of these tissues follows administration of A.C.T.H. in the normal but not in the adrenalectomised animal. They have also shown that there is a corresponding fall in the lymphocyte-count. Forsham et al. (1948) found a striking depletion of the circulating eosinophils after the injection of A.C.T.H. This effect can also be produced by the glucocorticoids, 17-hydroxy corticosterone (compound F), and cortisone (compound E). Forsham et al. have suggested a test for adrenal function based on this response. The extent of the depletion following administration of a standard dose of A.C.T.H. may be regarded as a measure of the amount of functional adrenocortical tissue. When adrenal function is impaired—e.g., in addisonians—the administration of A.C.T.H. produces little or no change in the eosinophil-count.

Dougherty and White (1945) stated that the titre of certain antibodies in the blood rose after the administration of A.C.T.H. and suggested that these were liberated as a result of a breakdown of lymphocytes. In view of later negative findings, however, this work requires further corroboration.

Changes in Electrolyte Balance

These changes, mediated by the mineralocorticoids, may be summarised as retention of sodium and chloride and excretion of potassium, calcium, and phosphate. The latter changes may perhaps be correlated with the retardation in chondrogenesis and osteogenesis in the rat tibia and in the decrease in plasma-alkaline phosphatase following administration of A.C.T.H. (Li et al. 1946). The effects of A.C.T.H. on calcium and phosphate metabolism in man, however, require confirmation owing, to contamination of preparations used with posterior pituitary hormones.

A.C.T.H. IN BLOOD AND URINE

Several claims have been made for the detection of A.C.T.H. in normal human blood and urine. None of these, however, are convincing, because of the bio-assay methods used.

Taylor et al. (1949) were unable to demonstrate A.C.T.H. in normal blood by the sensitive and specific ascorbic-acid depletion method of assay. They were, however, able to detect the hormone in the blood of patients with adrenal deficiency. We have recently recovered about 2·5% of the amount administered from the urine of a nephrotic receiving peptide A.C.T.H., and 5% has been recovered from the urine of a rheumatoid arthritic.

Greenspon et al. (1950) have shown that A.C.T.H. injected intravenously in the rat disappears completely from the blood-stream in about 20 minutes, with a half-life of 5 minutes. It thus seems very unlikely that appreciable quantities of the hormone persist in normal blood. The need for multiple divided dosage in A.C.T.H. treatment is also emphasised by this work.

CLINICAL ASPECTS

The preparation of pig protein A.C.T.H. on a relatively large scale by the Armour Company in Chicago has made it possible to study the effects of the hormone in man in both normal and pathological states.

The results of such studies have in general confirmed the above-mentioned work on laboratory animals—with the notable exception of the effect on mineral metabolism. As already mentioned, it is clear that in man, unlike the rat, considerable retention of sodium and chloride follows administration of A.C.T.H. The original studies of J. S. L. Browne, Fuller Albright, Mason, Li, and Evans and their co-workers are collected in the Proceedings of

the Josiah Macy Conference in 1948 on Metabolic Aspects of Convalescence (Reifenstein 1949).

The most striking clinical application of A.C.T.H. has undoubtedly been provided by Hench et al. (1949a and b), who have shown that it produces dramatic remissions in otherwise intractable rheumatoid arthritis. The details of this work, which has been completely confirmed, are now so well known that little further discussion is needed. It may perhaps be pointed out that no striking abnormalities of pituitary or adrenal function are known in rheumatoid arthritis, and that, as the doses used are far above the physiological levels, the defect in such cases may be in impaired utilisation of the glucocorticoids by the peripheral tissue cells. However, Sommerville et al. (1950) have shown that the conversion of progesterone into pregnanediol is greater in the rheumatoid arthritic than in the normal person. Since deoxycortone is also converted into pregnanediol in man, this observation suggests that abnormal steroid metabolism may also be a factor in rheumatoid arthritis. It must be emphasised that the sequence from administration of A.C.T.H. to relief of arthritic symptoms must involve many biochemical processes, one or more of which may be defective in rheumatoid arthritis. Such considerations may explain the conflicting findings in combined administration of deoxycortone and ascorbic acid. It must not be assumed that the essential biochemical defect is the same in all cases.

The results produced by A.C.T.H. in rheumatoid arthritis have led to an examination of its effects in many diseases, which can be grouped into three main classes: the so-called collagen diseases; the allergic diseases, and the lymphatic diseases.

Collagen Diseases

In rheumatic fever A.C.T.H. produces effects as striking as those in rheumatoid arthritis. The hormone seems to suppress the symptoms and in many instances shortens the course and severity. It also seems to alleviate acute endocarditis and pericarditis. Diets very low in salt are advisable during treatment of patients with acute cardiac involvement, so as to reduce retention of water. Reports on this condition have been published by Hench et al. (1949b) and by Massell and Warren (1949). Striking results in disseminated lupus erythematosus have been claimed by Elkinton et al. (1949) and Grace and Combes (1949). A.C.T.H. promptly alleviates symptoms, but there is an equally rapid relapse when it is discontinued.

Periarteritis nodosa has been studied by Shick et al. (1950). The effects are similar to those observed in other diseases of this group—i.e., relief of symptoms, with recurrence of the condition when A.C.T.H. treatment is stopped.

In this connection it is interesting that the skin and vascular reactions produced in rats by injection of horse-serum have been shown by Berthrong et al. (1950) to be inhibited by A.C.T.H. Rich (1946-47) believes that these vascular changes are identical with those in periarteritis nodosa.

Other diseases of this group where a temporary alleviation is produced by A.C.T.H. are scleroderma, dermatomyositis, and psoriasis; but only a few cases have been studied.

Allergic Diseases

A.C.T.H. exerts a well-marked effect on bronchial asthma and allergic rhinitis (Rose 1949). It was previously known that during acute asthmatic attacks the patient excretes histamine and histidine in the urine. During protracted A.C.T.H. treatment these substances are still intermittently excreted, but no bronchial symptoms are observed. The circulating eosinophils, which disappear from the circulation on A.C.T.H. treatment, have a relatively high histamine content.

Lymphatic Diseases

These have been studied by Rawson and his colleagues. A very remarkable effect on acute juvenile leukæmia has been observed. Even in extremely ill patients A.C.T.H. relieves the symptoms promptly and the blood picture is restored almost to normal within fourteen days; but, when A.C.T.H. treatment is discontinued, a relapse to the original state occurs. Less dramatic changes have been observed in chronic lymphatic leukæmia, acute and chronic myeloblastic leukæmia, lymphosarcoma, and Hodgkin's disease (Pearson et al. 1949).

Gout

Injection of A.C.T.H. during a quiescent period of gout induces an attack of gouty arthritis, but injection during an acute attack immediately alleviates the attack (Hellman 1949). The mechanism of the process is not understood, but it seems to have no connection with the elimination of uric acid produced even in normal persons by A.C.T.H.

Myasthenia

Torda and Wolff (1949) studied cases of myasthenia gravis during A.C.T.H. treatment. They observed a partial remission in so far as the patients could reduce the daily level of neostigmine necessary for reasonable activity. They also observed improved muscular activity and decrease of the specific cholinesterase inhibitor usually present in the serum of patients with myasthenia gravis. The improvement was maintained in one case up to a year after the end of treatment.

It will be seen that, in almost all the conditions studied, A.C.T.H. may produce a more or less striking suppression of symptoms but does not seem to alter the essential course of the condition or to affect the fundamental cause.

Ophthalmological Disorders

Gordon and McLean (1950) and Olson et al. (1950) have studied the effect of A.C.T.H. in a number of ophthalmological disorders. Amelioration of inflammation was observed in several of them, and these workers believe that A.C.T.H. will be of value in such cases because the improvement seems to be maintained after the end of treatment, in contrast to the other conditions described previously.

Virus Diseases and Carcinoma

A.C.T.H. seems to have no effect in virus diseases —e.g., poliomyelitis (Coriell et al. 1950)—or in various forms of carcinoma.

The somewhat optimistic hopes which the prompt relief of symptoms in many conditions aroused thus have very little basis. A promising line for future work would be to treat the causal factors by other methods while the symptoms are controlled by A.C.T.H.

However, the fact that the symptoms of many otherwise intractable conditions have been shown to be reversible is of great importance, and it is evident that A.C.T.H. is a physiological tool of great potency, capable of producing fundamental changes in metabolic processes.

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(*continued overleaf*)

THE REGISTRARS' CUT

SCOTTISH MINISTER'S EXPLANATION

WRITING to Lady Tweedsmuir, M.P., Mr. Hector McNeil, the Secretary of State for Scotland, says that he and his officers have been much concerned about the proposed reduction in the number of medical registrars in Scotland, "and I am anxious to persuade you and the public in general as well as the registrars that we have been handling the subject most carefully, without haste, and justly." He continues:

"Now I should want to make it emphatically clear at the outset that the changes contemplated are not dictated as an economy measure and that, further, I am concerned, at least as much as anyone else, to see that the standard of medical services in the hospitals is maintained and not impaired by these changes. . . .

"It has been apparent for some considerable time that there were far too many registrars under training in hospitals in relation to the number of specialist posts likely to be available in the foreseeable future. Now, plainly it was unfair that these young men and women should be left to entertain quite unjustifiable expectations of a specialist career. So, as long ago as December, 1949, an assessment of the situation by the Department of Health was sent to regional boards for their consideration. It was also quite deliberately published in the medical press [1] and elsewhere. So I hope that you will agree that we have not acted precipitately and that everyone concerned has had fair and timeous warning of the situation and all its implications.

"Further, in June, 1950, a more detailed examination of the numbers in the registrar grades and the optimum number required to meet the needs of the National Health Service for specialists was published [2] and again sent to the regional boards.

"The broad conclusion of these studies, i.e., that the number of registrar posts would have to be reduced if the training establishment were to be brought into balance, has been generally accepted by the medical profession and the regional boards. Consequently, a few weeks ago the Department issued a memorandum to boards specifically asking them to put in hand the necessary adjustments in the hospital staffs so that the number of registrars is reasonably related to specialist prospects in general and, in particular, to the prospective needs for the several types of specialists. . . .

"The main cause of the present difficulties is that although the registrar grade was intended to be for doctors training to be specialists it has been used far beyond this purpose and large numbers of registrars are at present unfortunately being employed without any clear idea whether they will be needed later as specialists or whether they are needed now for hospital work which is above the level of a house-officer but below that of a consultant. Indeed, there are further irrationalities. Although this is exceptional and not at all general, some are being employed in posts (both in teaching and non-teaching hospitals) which do not really afford training at all and are virtually a dead-end. I hope that you will agree that such situations have to be remedied.

"The Department's memorandum to regional boards attempts to make provision for the maximum number of registrars who can be trained with a reasonable expectation that they will be, if they make the grade, ultimately employed as specialists. From the medical staffing point of view it provides in addition for the recruitment of 'clinical assistants' who should be able to take over some of the work now being done by registrars and at the same time engage in general practice. It also, I should make clear, permits boards to make a case for any other additional posts that they think may be necessary to maintain the essential services of the hospitals.

"I must also mention the question of the level of teaching in our medical schools which must not of course be impaired by these changes. As you will know, it is the existing practice for some of the doctors who are training to be specialists to be employed to a limited extent during their training on duties connected with clinical teaching. How far it is necessary to provide additional registrar posts in the hospital service because of this will be for each regional board to work out in consultation with the university concerned.[3]

"We must, I think bear in mind that at present the medical schools can produce only an approximately fixed number of doctors each year. This output has to cover all branches of medicine and of course a regular supply of men and women must be made available for the general practitioner service which, it must be admitted, is the backbone of the whole service. I am afraid, therefore, that while we shall of course endeavour to see that the specialist service is developed where necessary, we cannot look to that service to provide unlimited opportunities for the registrars.

"Naturally, we have had very much in mind the effect of this policy on the existing registrars and I am personally much disturbed that some of them are bound to be disappointed. However, even if their expectations suffer, there are several points which I think they might reasonably expect to bear in mind. (1) The recent memorandum from the Department is not a bolt from the blue. For more than a year it has been manifest to everyone taking an intelligent interest in the subject that the number of registrars proper would have to be reduced. (2) Long before the inception of the National Health Service it was customary that the training for specialist status should be highly competitive and the weeding-out process consequently was severe. What has happened recently is that the increase in the number of trainees has risen in an excessive disproportion even to the increased number of specialist posts provided by the National Health Service. (3) Doctors, like all of us, cannot always expect to find posts which give them exactly the kind of career they would prefer. Individual preferences must be related to the needs of society and this to some extent must always determine the particular branch of medicine which doctors are to follow. Even now there are some specialties in which the opportunities are better than in others and in which, so far, there has not been heavy competition for appointments. I might mention psychiatry and radiotherapy where there has been some difficulty recently in filling some of the senior posts. (4) There is no escaping the fact that many of those registrars now in posts will find sooner or later that there is not a specialist post for them either generally or in their chosen specialty. It is, I think, in their own interest that this situation should be faced frankly now. (5) We have also to consider the position of the younger doctors now approaching registrar status. It is important that we should preserve for the abler doctors of each medical generation a fair chance to train for the higher posts. To bar them simply because of their age in favour of senior men who may not be of the same promise would be unfair both to these individuals and to patients and sufferers whom they would eventually treat.

1. *Lancet*, 1949, ii, 1193. 2. *Ibid*, 1950, i, 1165.

3. In Scotland the teaching hospitals are administered by the regional boards.—ED. L.

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"I am sure that regional boards, who recognise the needs of the specialist service in their areas and know the personal position of individual registrars, will make the necessary reductions not only with full consideration for the needs of the service but seeking also, as far as it is possible, to mitigate hardship for the doctors involved. It is perhaps relevant that I should say to you (without criticism of the excellent and arduous work overtaken in the other areas) that the authorities in the North Eastern Region, both before and since the inception of the new service, have exercised such a degree of caution and restraint in this subject that the difficulties there are much less severe than those in other parts of the country. That the hospitals in the North East have continued their work at a high standard with a relatively small number of registrars is worth the closest study."

Reconstruction

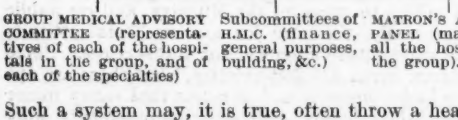
THE PRESENT STATE OF THE HOSPITALS

FROM A CORRESPONDENT

WITH a colleague, I have been visiting hospitals in several regions. What follows is an attempt to summarise our impressions.

Let me say at once that, from the standpoint of some of the more progressive hospital management committees (H.M.C.), the new set-up is a success. Anyone who visits a series of group headquarters, as we have done, will find himself approving the outright unification of the hospital services and the broad plan of local administration by bodies constituted solely for this purpose, combined with a wider regional control of the higher flights of medical affairs. The British genius for government by committee, backed by the old sentiment towards the hospitals, has proved its capacity to fuse into a new entity the diverse elements that go to make up the H.M.C. Continually we were told: "the committee is working well; there have been teething troubles, there are still many differences of opinion, but it is all right." There is a general, and strong, sense of responsibility for the welfare of the hospital services of the area *as a whole*. This is a new thing in hospital affairs, and its emergence is a great achievement, the credit for which can be widely shared. The revolution that is actually taking place in the hospital services of Great Britain is placing this country ahead of anything that is happening on the Continent or in the United States.

In many groups there is clear recognition of the partnership between the administration on the one hand, and the medical and nursing authorities on the other, in the conduct of hospital affairs. Diagrams are produced showing variants on the pattern:


HOSPITAL MANAGEMENT COMMITTEE
GROUP MEDICAL ADVISORY COMMITTEE (representatives of each of the hospitals in the group, and of each of the specialties)
Subcommittees of H.M.C. (finance, general purposes, building, &c.)
MATRON'S ADVISORY PANEL (matrons of all the hospitals in the group).

Such a system may, it is true, often throw a heavy load on the chief officer and his staff, for they may have to attend five or six main committees or subcommittees in the month, often meeting in the evening, not to speak of numerous minor subcommittees. Some are more successful in delegating it than others; but even where the load is heavy there can be felt a sense of something achieved, clearly traceable to the fundamentally sound pattern that has been laid down. Practice with regard to house committees varies. In some groups they have been abolished, as a hindrance to "group-mindedness." In others they have become in effect, and sometimes in name, welfare committees, controlling the amenity funds of the hospitals and sometimes minor staff appointments.

SOME BENEFITS

The reorganisation has resulted in, or greatly accelerated, many tangible benefits to the patients. Apart from the spread of consultant services—on which more is said below—many examples have been quoted to us of improvements on the old arrangements. Hospitals of any size which do not employ a catering officer and maintain a tolerably good standard of feeding are becoming rare—though of course there is still much to be done in this field. A new conscience has developed over arrangements for admission and in regard to medical records, prompted and greatly assisted by the King's Fund publication of 1948. In almost every hospital one is shown how the authorities are grappling with the ancient tradition that it does not matter how the patient is received provided he or she somehow hobbles into the ward. The large old outpatient waiting-halls have given way to more or less successful systems of appointments for outpatients. The old institutional brown or green dado of passages and corridors is being replaced by cream and light pastel shades, over which a great deal of trouble is plainly being taken. Many of the wards in out of the way places—even those in war-time huts and other converted buildings—reach a standard of friendly comfort which can challenge comparison with the leading hospitals in cities. All this is being done despite the discouraging heritage of buildings dating back to the poor-law of a hundred years ago, and sometimes including the workhouses of earlier days still. These latter are often empty; their former inmates have been moved to homes for the elderly. In fact hospital administration is well and truly on the move.

The spread of consultant and specialist services from the larger centres over other units has been the responsibility of the regional boards. Working out an establishment for each area and granting contracts on a whole-time or sessional basis—the latter has so far been by far the most popular with the consultants—has been a protracted process, and the resulting pattern is only now becoming apparent.

The H.M.C. must have been glad to be passive partners in these somewhat personal proceedings; sometimes, it seems, contracts have been granted and payment begun although there were not yet facilities for the necessary beds or clinics.

Often the new plan has meant development of consultant staffing which leaves no room for the former medical superintendent of the local-authority hospitals. Many superintendents have been glad to avail themselves of the opportunity to become consultants and to resign their administrative functions; but in other cases agitated discussion is still going on. It seems to be agreed that in many such hospitals there do remain some semi-administrative semi-medical functions which can best be performed by a medical superintendent, probably under some different title. In one case the former medical superintendent of a large local-authority unit spoke enthusiastically of the advantages of the present set-up, remarking upon the fact that he felt that he was now in closer touch with his committee than under the old county régime. Where there are cottage hospitals the general practitioners are naturally apprehensive lest the coming of the consultant services will mean that they are eventually squeezed out, and it is difficult to get a clear picture of exactly what is happening. The consultants are being called on increasingly for domiciliary visits, for which they receive fees under the National Health Service additional to their sessional remuneration. Though occasionally abused, these visits are of great value, and many patients who would never have seen a consultant in former times if they could not go to the hospital are to that degree better served today

MEDICAL ADVISORY COMMITTEES

Group medical advisory committees (G.M.A.C.) are now an established institution in all groups we visited, and relations with the H.M.C. appeared to be almost uniformly good. The medical men on the H.M.C. itself do seem to act, as of course they should, as representatives of the G.M.A.C. Sometimes the secretary of the group acts also as secretary to the G.M.A.C., and this seems to have worked well in nearly all cases where it has been given a fair trial. It provides an important link between the H.M.C. and its medical staff; now that the staff is largely appointed regionally, and functions in hospitals which are geographically far from group headquarters, it can easily happen that the members of the H.M.C. and their lay officers do not even know by sight the medical staff of their own hospitals.

NURSES

While medical staffing is mainly a matter for the regions, the responsibility for nursing rests squarely upon the H.M.C. itself. Numbers are going up, and though there is still a shortage there is a good deal of confidence among the authorities. Two main trends may be discerned. First, efforts are being made to develop existing (or establish new) general-nurse training schools in the most important secondary hospital centres in the group. It seems to be not uncommon to find the old training school at the former voluntary hospital still blessed with ample student nurses, and stress being laid on upgrading one or more of the larger ex-local-authority units to constitute a second—perhaps numerically larger—general training school. Such schools seem to have a fair prospect of recruiting enough staff, because of the increase of surgical and other acute work being undertaken in their wards. But there is also a movement for the establishment of "assistant nurse" training schools, under the revised General Nursing Council regulations, to take care of the miscellaneous units—chiefly chronic sick—which are still excluded from the purview of the hospitals with the general training schools. There is, as yet, no sufficient body of experience to tell us whether these assistant-nurse training schools are likely to be a success or whether it would have been better to allocate all the beds in the group among the general training schools.

This is a matter on which the new General Nursing Council will need to keep its ear close to the ground. A wrong decision might compromise the new hospital service at this its weakest spot. It would be a tragedy if once again the upgrading of some were achieved at the cost of downgrading of others.

Two factors were frequently mentioned which tend to make the nursing situation more difficult than it need otherwise be. First, the long-standing social distinction between different hospitals. Though social distinctions are beginning to disappear and members of the medical staff are, here and there, sending their own families to what were formerly poor-law hospitals, the feeling is still strong among the nurses. Second, the poor quality of much of the accommodation is a sad handicap. Some of it is so incurably "institutional" as to defy all modernisation. Large houses are being bought to supplement the accommodation—often in beautiful surroundings but somewhat distant from the hospitals. Comment may also be made upon the state of the sanitary annexes in many of the hospitals. It is now generally agreed that modern bedpan sluices are a distinct asset from the point of view of the nurse, but they are by no means universal. Often they are said to be "in the programme," but this is said without much conviction as to when they will materialise. This seems mistaken policy at a time when availability of nursing care is, in every group we visited, the final decisive factor in developing the service.

DIFFICULTIES

Are there any serious snags? It is encouraging to be able to say, so far as the hospitals are concerned, No. (The impact of all this on general practice is another matter.) With the obvious exception of the need for large-scale capital development, which now seems to be deferred indefinitely, there are no really important snags. Impatience with regional boards for delays and lack of comprehension of local conditions is much less evident than it was a year or so ago.

The provision that "savings" must be returned to the Exchequer is regarded by all intelligent H.M.C. personnel with whom we spoke as sheer folly.[1] There is surprisingly little anxiety about the restriction of maintenance expenditure to present levels: most H.M.C.s seem to feel that with care they can manage pretty well. Attention is focused rather on minor capital items, which have little chance of going through in present circumstances. An example would be the extension of a staff dining-room which would save half its capital cost in a single year by permitting reduction in staff. There seems to be no evidence of regional officers visiting and going into such matters with the thoroughness which alone would justify taking this kind of thing out of the hands of the local committee: the contrary is the case. In one instance we heard of representatives of the H.M.C. having been given "ten minutes" before a subcommittee of the regional hospital board to press the claims of its extensive capital programme. Some extension of management-committee powers to cover minor capital items—perhaps if they could be met out of "savings"?—would go some way to relieve such tension as does exist between H.M.C. and the regional authorities. An alternative—or possibly supplementary—remedy would be to permit or indeed to encourage the use of "free" monies for these purposes. In some areas free money is piling up, and there is indecision as to whether it may be used in support of projects which could theoretically be met from Exchequer funds.

The lack of an accessible summary of hospital statistics is felt acutely: to quote from the observations of one finance officer appended to an elaborate set of financial statistics covering an expenditure of a million pounds a year—"No information is available at present which would enable me to say how these percentages compare with other groups, but it is hoped that the board will one day find it possible to meet this need and thus afford some guidance to the committee on the matter."

The regions have not—so far—published their programmes of capital developments, and the management committees lack information about the general plan. They do not know why the claims of other hospitals are placed before their own, or what steps the regional board is taking to press on the Ministry, and on public opinion generally, the need for a more liberal attitude to capital expenditure upon the hospital services.[2] Some few items are given a "first priority," but these are apt to be the larger projects and it seems that many minor but nevertheless highly desirable improvements may never succeed in getting to the front of the queue.

H.M.C. AND ADMINISTRATION

Our visits made us aware of the immense importance of the right approach to the administrative work in the H.M.C. In the H.M.C. the administrators are being thrown into positions of great responsibility covering the whole

1. See *Lancet*, 1950, i, 962.
2. The Ministry has recently announced a two-year programme for capital developments in the Metropolitan regions. This shows the following figures:
   N.W. Metropolitan: 1951–52, £700,000; 1952–53, £800,000.
   N.E. Metropolitan: 1951–52, £700,000; 1952–53, £800,000.
   S.E. Metropolitan: 1951–52, £700,000; 1952–53, £800,000.
   S.W. Metropolitan: 1951–52, £1,000,000; 1952–53, £1,200,000.

of the hospital services of wide and populous areas, with budgets in some cases running at a million pounds a year and equal in size to those of the largest teaching hospitals. The men have been kept on their toes; they have to struggle with the problems of introducing consultant staffing among hospitals primarily staffed by general practitioners, and with finding nurses and other staff for large and somewhat intractable blocks of chronic sick, tuberculous, and other patients. Obviously some have been more successful than others but it is encouraging to find, so soon after the revolutionary changes of 1948, numerous examples of real progress and solid achievement.

Public Health

RESULTS OF SANATORIUM TREATMENT IN THE MIDDLE-AGED AND ELDERLY

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THE present shortage of sanatorium beds makes it imperative to use them to the best advantage. As things stand, many patients seem to derive very little benefit from their stay in a sanatorium.

The bad prognostic significance of a persistently positive sputum was demonstrated by Thompson (1942), who found that of 406 patients with positive sputum 42% died within twelve months of diagnosis, and only 1 in 8 survived ten years. Sputum-conversion is in fact the most important single objective of treatment. Unfortunately, however, the collapse therapy which is so useful for this purpose is seldom applicable to patients in the older age-groups, and the prospects of obtaining sputum-conversion are thus considerably reduced as age increases. The only treatment for most of these patients is routine sanatorium care, with the main emphasis on rest and graduated exercise—measures designed to increase general resistance to the disease. Such treatment seems to be of doubtful value unless indefinitely prolonged, and the question arises whether the results at present obtained justify the use of beds for this type of case.

CLINICAL MATERIAL

This paper is based on 107 consecutive admissions to the Liverpool Sanatorium since Jan. 1, 1946, of patients aged 45 and upwards whose stay in the sanatorium has ended.

Of these 107, 86 were men and 21 women, these figures roughly corresponding to the higher incidence of the disease in men in these age-groups found by Hebbert (1948). The age range was 45–70 years, and the duration of treatment 5–375 days, with an average of 124. The type and extent of disease as shown by radiography was as follows:

In 68 cases there was bilateral tuberculosis with cavitation; in the majority the disease seemed to be predominantly fibrocaseous, while in a few the appearances were of softer more recent disease. In 20 cases the disease was unilateral, though in some the lung was extensively affected. Carcinoma of the bronchus was diagnosed in 2 cases, upper-lobe bronchiectasis in 8, and inactive tuberculosis in 8. In the remaining case the X-ray film was normal, though the sputum was said to have been positive berore admission.

Tubercle bacilli were found in the sputum in 64 cases; in 30 the sputum was negative, and 2 patients had no sputum. In the remaining 11 cases the sputum was persistently negative while the patients were in the sanatorium, but tubercle bacilli had been found shortly before admission. Most of the cases of tuberculosis were classified as moderately advanced, but 14 were far advanced on admission. A few had coexisting disease which further worsened the prognosis: 2 had diabetes mellitus, 3 had severe basal emphysema, 1 had silicosis, and 1 had tuberculous pericarditis.

TREATMENT

In this series it was seldom possible to apply measures designed to control the local lesion: conservative treatment with the object of improving the general condition was the most that could be given. Nevertheless, artificial pneumothorax treatment was tried in 19 cases.

In 12 of these it was either impossible to induce a pneumothorax, or the pneumothorax was abandoned—either at once, as being contraselective, or later after an effusion had formed. One patient died after a coronary thrombosis while undergoing artificial pneumothorax treatment. In the remaining 7 the artificial pneumothorax was maintained; 4 of these cases were thoracoscoped and 2 had adhesions divided. In 1 case, in order to control a "dorsal" lobe cavity, the pneumothorax was supplemented by pneumoperitoneum. This was the only case in which sputum conversion was obtained, the criterion demanded being three consecutive negative smears and one negative culture.

The majority of the remaining cases in the series were given short periods of bed rest of one to two months and were then allowed up on hours in graduated stages. A few did not improve sufficiently to be allowed up, and these remained in bed until death or transfer elsewhere. A few cases that showed a good response to the preliminary period of bed rest were given more prolonged rest up to six or nine months. The cases of doubtful activity were allowed up at once and intensive sputum tests were carried out meanwhile.

One case of bronchiectasis of the left upper lobe was treated by lobectomy. One patient, whose X-ray film showed soft infiltration in the middle and lower zones of the left lung and whose sputum was positive before admission, was given a ten weeks' course of streptomycin and *p*-aminosalicylic acid with almost complete clearing of the infiltration.

RESULTS

Of the 107 patients, 22 discharged themselves, 9 died, 2 were discharged for infringement of the rules, and the remaining 74 completed the prescribed course of treatment. The results, assessed according to clinical condition, are as follows:

Clinical condition	*Cases*
Unchanged	40
Slight improvement	39
Considerable improvement	14
Worse	5
Died	9

These results are based on objective findings such as gain in weight, diminution in quantity of sputum, lowering of the erythrocyte-sedimentation rate (E.S.R.), temperature, and pulse-rate, and on the subjective findings of a reduction of lassitude and feeling of ill health, and a reduction in cough and dyspnœa.

Judged by changes in the radiological appearance, the results were:

Radiological appearance	*Cases*
Improved	21
Worse	11
Unchanged	55

The cases classed as improved showed a clearing of infiltration or a diminution in cavitation or both. Only 87 cases are included, because the other 20 cases were not radiographed again, owing to death or premature discharge.

Assessment of the results on the incidence of sputum-conversion shows that this was achieved in only 1 case—in the patient treated by artificial pneumothorax supplemented by pneumoperitoneum. In a few cases, however, intermittent negative smears were obtained where

previously all had been positive, and it is possible that the degree of infectivity of some cases was temporarily reduced.

DISCUSSION

These results show very clearly how little the individual patient unsuitable for active treatment benefits from sanatorium treatment. It can, of course, be fairly argued that only half—or even quarter—measures have been applied in most of these cases, for none of them had really lengthy treatment such as was prescribed in the earlier days of sanatorium treatment. Today, however, in this age of shortages and of priorities, it does not seem reasonable to give prolonged treatment to such patients when it means further delay in the admission and treatment of cases more amenable to therapy.

If we cannot expect to materially alter the prognosis for these patients, is it logical to admit them to sanatoria at all? The answer to this question depends largely on the temperament and clinical condition of the particular patient; and it behoves the chest physician to assess each patient carefully from all angles before recommending him for sanatorium treatment. The large number in this series who took their own discharge shows that many older patients are unable to adapt themselves to the discipline of a sanatorium, and the main desire of many of them seems to be to get back to their familiar haunts and habits—especially when no active treatment is given. A secondary objective of sanatorium treatment is the education of the patient in precautionary measures, and in the nature of the disease and the need to lead a regular disciplined life with a correct balance between rest and exercise. This objective is seldom attained with older patients, for they are slow to learn and practise precautions. The two patients discharged for infringing the rules were both observed spitting in the grounds.

Another reason for admitting this type of case to a sanatorium is to prevent the infection of Mantoux-negative contacts at home. Actually it is usually found that all susceptible contacts have been infected by the time the diagnosis is made; but there will always be some cases in which protection of contacts is a major consideration. This object is defeated if the patient is discharged infectious: in some cases, indeed, the result of treatment has been to convert a bedridden infectious case into an ambulant one, thus increasing the risk to the community in general. In a few cases beds will have to be provided for seriously ill patients who cannot be nursed at home, but from the point of view of convenience and expense to the relatives in visiting, it is better that such beds should be in a tuberculosis ward in a general hospital.

In several cases in this series no evidence of active disease was found. The decision as to whether or not an abnormal X-ray appearance is due to active disease should be made at the chest clinic and not at the sanatorium, since all necessary investigations—such as gastric lavage, laryngeal swabbing, estimation of E.S.R., tomography, bronchography, and bronchoscopy—can be performed on outpatients. The resources of the sanatorium should be used in treating those cases which are amenable to active treatment.

Wynn-Williams et al. (1950) have given details of a scheme which successfully reduced a sanatorium waiting-list. This has the great merit of realism, but it calls for much coöperation between chest physician and sanatorium superintendent. Under this scheme, patients who —because of advanced disease, or age, or for other reasons —are considered unsuitable for collapse therapy are not, except in special circumstances, admitted to a sanatorium; instead, they are kept at home under the careful supervision of the chest physician and health visitor. This frees many sanatorium beds. Tattersall (1949) has pointed out that a coöperative patient can be taught by the health visitor many of the precautions which he would learn in a sanatorium as well as a suitable regimen to adopt.

The policy of admitting to sanatoria only those cases which are suitable for active treatment will be impracticable unless there is a sufficient nursing staff. But it might, by making the work more interesting, improve the recruitment of nurses for sanatoria.

SUMMARY

1. The present serious shortage of sanatorium beds demands that every available bed be used to the best advantage.

2. The results of sanatorium treatment in a series of 107 middle-aged and elderly patients, most of whom were unsuitable for collapse therapy, suggest that the use of sanatorium beds for this type of patient is not justified at the present time.

3. Patients of this class should, whenever possible, be treated at home under the supervision of the chest physician and health visitor, and priority for sanatorium beds should be given to patients who would profit from active treatment.

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Influenza

Statistics for the week ended Jan. 6 pointed to an increased incidence of influenza throughout England and Wales. The figures for pneumonia cases and deaths and for influenza deaths in the Great Towns during the six weeks up to Jan. 6 were:

	Week ended					
	Dec. 2	*Dec. 9*	*Dec. 16*	*Dec. 23*	*Dec. 30*	*Jan. 6*
Pneumonia:						
Cases	282	347	374	364	502	956
Deaths	198	236	289	351	383	770
Influenza deaths ..	28	34	33	54	102	458

Of the 458 deaths from influenza, 339 occurred in the region north of a line roughly from Crewe through Sheffield to the Humber; and these deaths were largely associated with outbreaks on Merseyside and Tyneside. Here the disease was generally mild, though highly infectious; and the deaths, with very few exceptions, were among elderly people.

There was some increase in deaths from influenza in all regions, including London and the South-East, compared with the preceding week. However, in the week ended Jan. 6 deaths certified as due to influenza in London County numbered only 40. It seems that, particularly in the North and North-West, the disease is becoming somewhat more severe.

The numbers of new claims to sickness benefit also indicate an increased prevalence of influenza. Whereas in the week ended Dec. 19 claims totalled 128,842, in the week ended Jan. 2 they totalled 246, 223.

In the areas in the North and North-West that were originally attacked the epidemic seems to have passed its peak. There is, however, evidence of increased prevalence in areas that so far have not been seriously affected. The position in the South up to Jan. 16 remained uncertain. There was, however, serological evidence of virus-A infections, and virus A was isolated from garglings in one case during the week ended Jan. 13.

Influenza Abroad.—Prevalence is high in Belgium, Holland, Denmark, and Greenland; and the disease is probably prevalent in Northern Spain. In Holland the virus is apparently virus A very possibly of the A prime type as in the Swedish outbreak, which was the first in Europe this winter.

Smallpox at Brighton

Up to noon on Jan. 16 there had been 30 cases of smallpox in the Brighton area. 8 patients had died.

Cases have come mostly from three foci:

1. *Bevendean Hospital.*—All the initial cases from here were employed in the ward on which the 2nd case was nursed for ten days. 8 of the patients belonged to the day or night nursing staffs, and 2 were ward maids. Of these, 3 nurses and the 2 domestic workers have died. During the past few days 4 other cases have occurred in the hospital. These were connected, more or less directly, with the personnel on the affected ward.

2. *Laundry.*—The clothing of the original case was sent here, and from this 6 employees have contracted the disease; 2 laundry workers have died.

3. *Telephone Exchange.*—The 2nd case was employed here, and 2 further cases have come from this source.

In the past week 4 cases have been notified which do not belong to the three main foci, and these patients were not under surveillance when they developed the disease. Rather tenuous circumstances may relate these cases to existing foci, but the position is not clear. Other cases of this type have to be expected. Only now is the infection which was disseminated from the three foci, before strict surveillance was set up, becoming manifest.

Although the disease is confined to the Brighton area and there is no sign of spread to other parts of Great Britain, the strictest vigilance is still imperative throughout the country.

INCIDENCE OF VACCINATION

In his report for 1949, Dr. I. Gordon, acting medical officer of health for Ilford, records an investigation of the incidence of vaccination among children attending infant-welfare centres. In fifteen centres the incidence varied from 54 to 22%; and Dr. Gordon remarks: "It is apparent that children living in the three districts which contain the higher income groups are protected to a greater extent than those living elsewhere in spite of the fact that vaccination is free."

Poliomyelitis

In England and Wales notifications of poliomyelitis during the week ended Jan. 6 were: paralytic 37 (36), non-paralytic 10 (17); total 47 (53). Figures for the previous week are in parentheses.

Notifications in the corresponding week of the previous four years were: 1947, 10; 1948, 58; 1949, 20; and 1950, 54. The figures for this week in 1948, 1950, and the present year are comparable to the extent that in each case the incidence of the disease in the previous year was very high.

The Third Quarter

In England and Wales during the quarter ended Sept. 30, 1950, the infant-mortality rate was the lowest ever recorded for any quarter; the rate, provisionally corrected, was 24 per 1000 related live births. This is reported by the Registrar-General,[1] who gives the death-rate for the quarter as 9·3 per 1000 population, compared with 9·2 for the corresponding quarter of 1949. Deaths from acute poliomyelitis numbered 373 (provisional total), compared with 264, 330, 86, and 71 in the four preceding quarters.

The birth-rate was 15·4 per 1000 population, compared with 16·6 per 1000 for the corresponding quarter of 1949, and an average of 18·0 for the third quarters of the five years 1944–48. Illegitimate births accounted for 4·8% of the total births registered, compared with 5·1% in the corresponding quarter of 1949. The stillbirth-rate was 22·3 per 1000 total live and still births—0·3 higher than for the third quarter of 1949.

Births exceeded deaths by 67,323, the corresponding increases for the third quarters of 1947, 1948, and 1949 being 119,409, 90,310, and 82,031.

1. Registrar-General's Quarterly Return for England and Wales: quarter ended Sept. 30, 1950. H.M. Stationery Office. Pp. 35. 1s.

In England Now

A Running Commentary by Peripatetic Correspondents

Stephen Potter has not mentioned doctors in his book *Lifemanship*, either because he did not realise what a vast structure of ploys and gambits we work in, or more probably because he was appalled by its immensity. Countless generations of doctors, from Hippocrates with his oath to the men of today with their doctor-patient relationship, have built up such a system of Lifemanship that even the most insignificant physician can guarantee to retain the essential "one-upness" with 95% of his patients.

Fifty years ago the successful doctor was said to need three things: a top hat to give him Authority, a paunch to give him Dignity, and piles to give him an Anxious Expression. Now top hats are out of fashion, the paunch has been rationed away, and liquid paraffin has relieved the anxious expression; but somehow our Authority has grown stronger while the other two wilted away. I should like to see Frith Morteroy, Odorieda, or even Potter himself survive a consultation with his physician and retain his one-upness to the end. The initial verbal encounter usually demoralises any but the hardiest spirits, though there have been patients who hit back at this stage. You may remember the example recorded in these columns, where a mother, no doubt roused to a cold fury by the pædiatrician's persistent and wholly irrelevant interrogation, began to inquire into his own past history. Then there was the rather similar case where a patient was being asked by the surgeon how long he took to pass water and was replying in the usual indefinite manner—"Quite a while . . . Some time . . . About three months . . ." and so forth. Finally, stung by the surgeon's insistence on what seemed a wholly unreasonable degree of accuracy, he said "If I may ask, Sir, how long do *you* take?" Lay Lifemen will be disappointed but not surprised to hear that this ploy had no effect on the surgeon, who replied without a second's hesitation, "Two minutes dead."

Patients who have preserved their equanimity through the questioning regarding their bowels and water, their habits with wine and women, and their incomes, now face Ordeal by Examination. Here there falls out of the fight the woman whose secondary sex characteristics are derived not from nature but from Bond Street at 10*s.* 6*d.* a pair, and the elderly young man whose slim waist-line is preserved not by rugger but by a belt, and, of course, those who only wash for appearances' sake and not for hygiene. (*Note:* A resistant patient can often be shaken by making him remove his socks.) Those gallant few who possess torsos like Greek gods and silk underwear, and therefore have nothing to hide, are now subjected to indelicate exploratory investigations with the index finger which soon reduce them to fundamentals.

Finally there are the weapons of Diagnosis and Prognosis, although these must be used with discretion. The doctor who gives his patient six months to live is in a weak position when he meets him two years later. But when applied carefully a suitable diagnosis and well-balanced prognosis should fittingly terminate an interview in which the professional Lifeman has held all the trumps.

* * *

After Mr. Noel-Baker's broadcast appeal for fuel economy the group round the registrars' dining-table were discussing what our several departments could do. The surgical registrar agreed that the theatre was the greediest consumer, with its lighting and heating, the flood of hot water poured into the drains in the ritual of scrubbing-up, and the diathermy apparatus. "I'll hand the Old Man a scalpel next time he wants a diathermy cautery," he said hopefully; "it ought to incandesce quite enough in his grasp. And the new H.S. gets so hot and bothered when his retractor slips that he should save a lot on heating." "I suppose your department, Psyche, uses the least electricity," drawled the E.N.T. registrar; "you wrap your patients in blankets on a couch and sit behind them in a dimly lit room so you can snooze in comfort. In fact you're pretty well always

in the dark." "What about E.C.T. though, and electro-narcosis?" asked the others; "they're enough to cause a nation-wide power cut." The medical registrar did not join in the discussion, his mind being permanently occupied by thoughts of his forthcoming encounter with the Preceptors. We had to be content with making him promise not to burn the midnight oil.

* * *

There is, I fear, no doubt that My Work has become an obsession and is seriously interfering with My Life. I find myself refusing invitations to sherry parties because they interfere with My Work, and I dread the telephone bell lest it interrupts me at it. I go shooting, of course, on Saturday afternoons, largely from force of habit, but I always refuse to stay to tea afterwards, hurry home, clean my gun, and settle down to My Work. Worst of all, perhaps, My Work has virtually put a stop to My Serious Reading. A reluctant half-hour in bed is all I can spare for that. What is My Work, you ask? Well, if you must know, I am making a wool rug and am determined that—unlike so many others—it shall be finished. "*Fecit* 1951" is to be worked tastefully in blue in the top right-hand corner; and if all this is not evidence of senescence I should like to know what is.

* * *

In Casualty the other day we were haunted all the afternoon and evening by a lady with an unalterable conviction that we were detaining her husband there or elsewhere in the hospital. Like an unhappy spectre she searched under couches, behind curtains, and in even more improbable places, not one whit deterred by the assurances of Sister and the casualty officers. She made the life of the admission clerk a misery all day by catechising him on the name of every patient in all our many hundred beds; his solemn declaration that we had no man of her name in the hospital was met with a hostile stare of cold disbelief. At midnight, when she had been getting in our way for eight or nine hours, scrutinising each new face myopically, her tune changed—the lost spouse had apparently died of waiting, and while mourning his departure she was now seeking her daughter. Firmly shown the door in the small hours, she was yet back with the dawn; and finally she had to be persuaded to continue her search on the guiding arm of a stolid Metropolitan constable.

* * *

I can sympathise with my peripatetic colleague of Dec. 16 (p. 821) who has had to learn the Derbyshire usage of English the hard way, because I spent some delightful and enlightening months as an assistant in the Yorkshire coal-field during the war when I had just emerged from the depths of Central Europe, knowing only the English of the Warner Brothers, augmented by some virile but rarely applicable adjectives picked up on service with the Merchant Navy. There was that abdominal emergency, announced by an early morning caller with a terse "It's coming both ways with Mrs. X," the nature of which became obvious when I reached the bedside of the old lady. Thanks to my long Boy-Scout and military experience, plus a lively imagination, I soon grasped the implications of that common complaint in the surgery, "I cannot go to the ground, Doctor."

* * *

My friend who has not long been in partnership with two doctors in Kansas tells me that on Christmas morning he got a present of a case of beautiful apples from a Mr. Grimme. He told his partners about it, and asked who Mr. Grimme was. "Mr. Grimme," they replied, "why he is the undertaker in the next block." "I see," said my friend." Did you two get apples too?" They were a little embarrassed by this question. "Why, no," they told him, "we got oranges. You do better next year and then you'll get oranges too."

* * *

Aphorism of the Week

Disseminated sclerosis is the orange peel of orthopædics.

Letters to the Editor

PROSPECT OF WAR

SIR,—There is an increasingly widespread assumption, both within the profession and elsewhere, that world war is inevitable. Concerned by this defeatist attitude we have met together to exchange ideas and now feel impelled to express ourselves publicly.

Five years have passed since the Allies achieved a victory of desolation through unconditional surrender and massed bombing. Twenty million men, women, and children were killed or maimed; millions were made to suffer greater indignity and mental and physical torture than the human spirit has ever known, and, of these, many were the noblest characters of their day. Now, even the perspective of atom warfare fails to arouse horror; the magnitude of threatened disaster paralyses the mind. We shrug the terror away and take comfort in resolute preparations to find hospital beds for the survivors. But the evils of war long antedate the outbreak. £1,000,000,000 spent in preparation for war (to kill before we are killed) are £1,000,000,000 not spent on houses, schools, hospitals, health centres, and research. Each pound spent on bombs means not only bodies burnt to death in the future but more dead babies now, more families broken by tuberculosis, more jaded women old before their time, more young delinquents. Food becomes scarce again; old people barely survive on their pensions.

"War is an anachronism." "War never achieves the ends for which it is fought." "There are no warmongers: nobody wants war." These are truisms, but every day the news comment in the papers and the speeches of responsible men are putting before us a picture of the world in which it seems that war cannot be avoided. These voices name the enemy as communist Russia. Sooner or later, they say, Stalin will invade us, and it is useless to negotiate till we are ready to fight him; our motives are clear and innocent, his are clear—however much he may attempt to disguise them—and wholly evil. If he offers to meet us, it is only that he may seize the opportunity to make a treacherous attack. We are told that communist Russia has enslaved or hypnotised the millions within her borders while our peoples are free; that her government is reckless of human life and that we cherish it.

Is this so true a picture that we must acquiesce in the headlong drive to war—a war which must come out of the arms race as inevitably as the depression of human standards follows from the preparation for it? Is it not likely that the "enemy" is given the same picture, but with hero and villain interchanged? Willingness to coöperate and to understand the other man's rights and needs are hallmarks of civilisation; belligerency and self-interest are not. "Negotiation from strength" is as good or as bad an axiom as "The best defence is to attack." Both are the slogans of battle, the equivalent of the schoolboy's "I dare you." Above all else, the great issues of peace and war demand dispassionate judgment; yet thought about them has become charged with irrational emotion.

We appeal to all our fellow doctors who think there may yet be an alternative to merely providing treatment for casualties; we ask them to join us, in the spirit of our chosen profession of healing, in doing all in their power to halt preparation for war and to bring about a new and determined approach to the peaceful settlement of disputes and to world disarmament.

RICHARD DOLL
ALFRED ESTERMAN
IAN GILLILAND
HORACE JOULES
DUNCAN LEYS
MARTIN POLLOCK
LIONEL PENROSE.

24, Lansdowne Road,
London, W.11.

TROPIC OR TROPHIC

SIR,—It matters very little whether the pituitary hormones are called -tropins or -trophins; the meaning of a word depends on usage and not on etymology and few of us are good classical scholars. The main trouble at the moment is that the terms employed are long and clumsy or else are replaced by a group of capital letters which mean little to the uninitiated. What we need are new short, euphonious, and clear names. I am bold enough to suggest a few, though I am certain that many of your readers can do better.

Growth hormone: somatophin.
Adrenocorticotrophic hormone: adrenophin.
Follicle-stimulating hormone: folliculophin.
Luteinising hormone: lutophin.
Interstitial-cell stimulating hormone: leydophin (but how many people are familiar with Leydig's cells).
Thyroid stimulating hormone: thyrophin.
Lactogenic hormone: lactophin.

Department of Physiology,
Middlesex Hospital Medical School,
London, W.1. S. WRIGHT.

VACCINATION AGAINST SMALLPOX

SIR,—Dr. Killick Millard's paper last week is of considerable interest to me as the abandonment of infant vaccination in this country was the subject of a discussion at the Yorkshire branch of the Society of Medical Officers of Health last June, and a paper of mine on this subject is now in the press. My arguments, however, are based on the low level of herd immunity attained and not on the grounds that Dr. Millard advocates.

Dr. Millard's main argument is that mild cases of variola major only occur in the vaccinated. In my opinion this is fundamentally wrong, as all types of smallpox, from fulminating to mild, can occur in the unvaccinated. In a series of cases that I reported from Tripolitania 105 cases of types 6 and 7 (discrete and mild) occurred out of a total of 300 cases in unvaccinated patients. A type-6 case occurred as an intra-uterine infection while the mother had a malignant type 2, neither, of course, having been vaccinated. Dr. Millard also minimises the difficulties associated with the diagnosis of the most severe types. Although true hæmorrhagic smallpox, the purpura variolosa of Ricketts's and my classifications, occurs in probably only 1 or 2% of cases, malignant confluent type-2 cases occurred in 73 of this unvaccinated series. As experience in Glasgow has shown, this type of case may be in a general hospital for five days before being diagnosed.

In my experience modification of the virus of variola major does not occur by passage through either unvaccinated or vaccinated persons. Mild cases in unvaccinated or vaccinated persons give rise to all the different types, the proportion depending upon factors in the herd immunity, either inherited or acquired by vaccination. It is impossible to decide the infectivity of severe or mild cases from quoting a few isolated cases. The most bizarre trains of circumstances sometimes occur. There are plenty of examples in the literature of both severe and mild cases being the origin of outbreaks, although the mild case is usually ambulant and, therefore, a considerable danger to the community. The infective period, however, is probably shorter, and experience shows that the maximum risk occurs in close contacts in the family and at work. It should not be forgotten, however, that the malignant case which ultimately dies may be ambulant on the second or third day of the disease, between the pre-eruptive and eruptive phases, and the presence of many lesions in the mouth and larynx increases the weight of droplet infection.

Dr. Millard refers vaguely to "a vast amount of vaccination in India" having no appreciable effect on smallpox incidence. When one considers India's population of some 400 million, the difficulties of vaccination, and the relatively short duration of absolute immunity, it is very doubtful if 5% of India's total population are immune at any one time. One would not expect this to have any appreciable effect on incidence, but the fault is not with vaccination. While all would wish that the immunity produced by vaccination was more lasting, I am surprised to see Dr. Millard suggest introducing variola minor into India as a remedy. Surely this is likely to confuse patient and medical profession alike.

As we have no carriers of smallpox virus it must not be forgotten that if the world ever reaches a stage of peace the United Nations could for a small sum of money, compared with the cost of armaments, carry out a smallpox eradication scheme for the world, by a once-for-the-last-time vaccination.

Department of Preventive Medicine
and Public Health,
University of Leeds. C. W. DIXON.

MASS RADIOGRAPHY

SIR,—It is not practicable now, or in the foreseeable future, to examine with mass X-ray apparatus all "males and females between the ages of 15 and 25" no matter where they are—in industry, at school, on the land, or anywhere else, be it in urban or rural communities. Why not use the available man-power and machines to X ray smaller numbers, but in those groups known to have a higher incidence of disease? The local chest physician is more likely to know these groups and the best method of approach than a highly mobile director of mass radiography.

What is the point of examining with mass radiography such a highly unproductive group as school leavers without also employing the tuberculin test and B.C.G. vaccine?

Isolation Hospital,
Ipswich. CHARLES J. STEWART
Chest Physician.

A CENTRAL DEFECT

SIR,—Readers of *The Gathering Storm* will remember that one of the first steps taken by Mr. Churchill when he took over the Admiralty in 1939 was to form a statistical department, consisting of "half-a-dozen statisticians and economists whom we could trust to pay no attention to anything but realities." This gave him, he wrote, "my own sure, steady source of information, every part of which was integrally related to all the rest."[1]

The Ministry of Health, which now has to grapple with a task surely as vast and intricate as that of the Admiralty in 1939, still has no statistical department. Although I shall probably be accused of overestimating the importance of my own profession, I would say that many of the shortcomings of the National Health Service can be traced to this one fact. I suggest, for instance, that the present registrar crisis might not have arisen had the problem been entrusted from the start to statisticians trained to collate and analyse quantitative material in such fields as this.

It is not enough for the Minister to be able to call on the services of such eminent medical statisticians as Dr. Percy Stocks and Professor Bradford Hill (great though these services have been). What is needed is a statistical department permanently working on the many problems posed by the N.H.S., for there can be few problems in a nation-wide health service that have not at least a statistical aspect. It should be the function of the administrative statistician to draw the attention of the policy-maker to trends in, for instance, the probable number of jobless registrars in precisely the same way as the medical statistician draws the attention of the doctors to the increase in, say, the notifications

1. The Gathering Storm. London, 1948; p. 368.

of poliomyelitis; but to perform this function he must be an integral part of the administrative machine; he must be in a position, as was Mr. Churchill's statistician, to examine and analyse all the departmental papers with "relentless pertinacity."

Is it too much to hope that, in the present crisis of the National Health Service, the Minister of Health will act as decisively as the First Lord of the Admiralty in 1939?

Department of Medical Statistics,
St. Bartholomew's Hospital,
London, E.C.1.

M. P. CURWEN
Statistician.

OCCUPATIONAL THERAPY

SIR,—I agree with Dr. Herford (Dec. 30) that it may be very desirable for the patient to see "the range and number of small crafts to which his hand may be turned for sheer pleasure and joy in creation, perhaps with the added gratification of gifts for friends or furnishing for his home." But is that the sort of therapy which is usually needed, especially by men, who often are anxious to earn a living? Is it not somehow a luxury which we cannot afford at a time when every single hand is needed?

A proper job means much to the man who has been away from his work throughout his illness; with handicrafts many of them feel simply frustrated. Return to a "work environment" is what they commonly want.

A number of factors have prevented occupational therapy from being converted into industrial therapy (which means being directed more towards the actual future job): the occupational therapist's training would have to be changed; men with practical experience in industrial life, such as the industrial medical officer and the industrial psychologist, would have to be called in, and, of course, positive coöperation from industry itself would have to be the mainspring. Here is the crux of the matter. The occupational-therapy schools have tried to get such help; but on the whole industry has not reacted very favourably. To convince industry that industrial rehabilitation—in which the first step is industrial therapy—is really in its own interest will be possible only with the help of the medical profession. Vauxhall and Austin in their rehabilitation workshops have given splendid examples of the work which can be done by the creative coöperation of the doctor and the engineer. There is no reason why what has been done there should not be done in other industries.

London, N.W.3.

R. W. M. KRAUSS
Industrial Psychologist.

"THE LIVER"

SIR,—May we, as the authors, be permitted to comment on your review (Dec. 30) of our book?

Because of the novelty of the views expressed we did not expect approbation, but we had hoped for equitable treatment. In view of the fact that our bibliography covers over 300 references to published works, and that no fewer than 12 important experimental and original communications by Blond are quoted, it seems at least unfortunate that strictures criticising the lack of *experimental* proof should be directed at this pioneer work.

At the same time we should like to direct attention to recent papers and their accompanying pathological findings and photomicrographs dealing with the histology of tissues "in the area of portal hypertension."[1] The salient features of these papers indicate that the ætiology of the two clinical entities of appendicitis and gastric ulcer is unknown, and that none of the current theories explain their causation in a way universally acceptable. Study of the photomicrographs accompanying each article makes it clear that the condition is accompanied in its early stages by hyperæmia, and in its more chronic phases by ischæmia. It will be agreed by all that the phases of a pathological process accompanied by venous engorgement follow this pattern. To this extent we claim that these papers vindicate our hypothesis that the common cause in these two conditions at least is associated with venous engorgement of the veins of these two areas. We have, it is felt, demonstrated beyond doubt that the venous drainage of the areas is in fact normally via the portal system. It must be conceded that a sudden thrombophlebitis occurring in the venous roots of an organ already the seat of venous engorgement, will lead to a catastrophic state of the organ concerned (in the case of a hollow viscus, to perforation).

Enough has been said here, we feel, to vindicate our theories, and thus allow us to press for careful consideration of the thesis put forward in our work, and to ask that more than "those who enjoy finding the weak spots in a novel argument" should read and carefully appraise our work. We are quite confident that those who do so with an unbiased mind will inevitably come to a better understanding of some hitherto unsolved problems in medicine. You, Sir, we feel sure, will not lightly allow an original work of challenging unorthodoxy quietly to fail, from lack of publicity. We are confident that what our "novel argument" needs more than anything else is intelligent and unbiased criticism—criticism which will look beneath the surface of our hypothesis, and which will not be hidebound by conventions which do not explain but only serve the examinational mind to amass degrees.

Even if we cannot persuade reviewers to accept all our views, surely these are not to be condemned *in toto* for that reason.

London, W.1.

DAVID HALER
KASPER BLOND.

1. Wakeley, C., Childs, P. *Brit. med. J.* 1950, ii, 1347. Key, J. A. *Ibid*, p. 1464.

PURIFICATION OF VACCINE LYMPH

SIR,—I read with great interest McClean's[1] article on purification of vaccine lymph and the subsequent correspondence.[2] It is evident that all the methods in vogue are essentially in the nature of a compromise; for either the potency is affected or the bacterial contamination of the lymph is not reduced effectively. In this connection I wish to call attention to a new technique, known as the "streptomycin technique," developed by me at the Government Vaccine Institute, Bangalore.

This technique is based on the findings of a detailed study made by me on the effects of penicillin and streptomycin on calf-lymph.[3] These antibiotics were used in a variety of ways both on the vaccinifers and on the prepared lymph at various stages. The local application of streptomycin over the vaccinated area of the calf was found to offer an over-all advantage. The advantages are a high degree of purity, high potency, and reduced cost. Further, the method is simple and by far the quickest.

Briefly, the method consists in local application of streptomycin solution (10–20 mg. per ml. in 50% sterile glycerin of pH 7·6) over the vaccinated area and its neighbourhood—in fact over the entire shaved area of the abdomen of the calf—twice a day for five days. The first application is made about 6 hours after infecting the animal with the seed virus, and the last about 16–18 hours before scraping. When the vesicles are ready for collection they are scraped and triturated with 50% glycerin (1 : 5) in the usual way. The lymph thus prepared is found to have a bacterial count of about 200 or less per ml.—most of them belonging to the *Bacillus subtilis* group of organisms. The potency of the lymph is as high as $10 \mp^{10}$. This permits the dilution of vaccine further by about 20–25 times.

We have been using this technique for the last eight months with extremely satisfactory results. Moreover,

1. McClean, D. *Lancet*, 1949, ii, 476.
2. Sanjiva Rao, R. *Ibid*, 1950, i, 328. McClean, D. *Ibid*, p. 421. Greaves, A. V. *Ibid*, p. 928.
3. Krishnamurthy, V. N. *Nature, Lond.* 1950, **165**, 451; *Brit. med. J.* 1950, ii, 1035.

this technique, by providing a suitable raw material—namely, vaccine pulp of high purity and potency—should be applicable also to the production of dry vaccine.

I should be glad to give further information about this technique to interested persons.

Vaccine Institute, Bangalore, 2, Indian Union. V. N. KRISHNAMURTHY.

CELL EMBOLISM AND METASTASIS

SIR,—Your leading article last week refers to Prof. J. S. Young's ingenious experiments demonstrating the mechanical basis which underlies the entry of tumour fragments into blood-vessels.[1] Professor Young suggests that the extravascular pressure rises above that within the vessels.

In examining histological sections of clinically benign vesical papillomata I have been struck by the frequency with which tumour cells can be seen lying inside the vessels. They were noted in 7 of the last 19 such specimens in this department, and yet such tumours are seldom disseminated by the blood-stream. It is possible that the extravascular pressure in these tumours has been raised by the distension of the bladder during cystoscopic fulguration, and this observation might be regarded as confirmatory evidence of Professor Young's thesis.

Department of Pathology, The Guest Hospital, Dudley. A. G. MARSHALL.

ENDURANCE FEAT BY A YOGI PRIEST

SIR,—There is nothing in the feat described on Dec. 23 by Dr. Vakil which cannot be very simply explained. It is well known that under hypnosis there is an extraordinarily increased control over the autonomic nervous system, and all the corresponding functions of the body. It is easy, for instance, to slow the cardiac and respiratory rate. The yogi feat is achieved by self-hypnosis.

London, W.1. S. VAN PELT
President of the British Society of Medical Hypnotists.

EXTRAPERITONEAL CÆSAREAN SECTION

SIR,—Mr. Stansfield and Mr. Drabble are to be congratulated on their interesting paper last week, and on their excellent results from extraperitoneal cæsarean section; but someone should sing again the praises of the orthodox transperitoneal approach.

During the last twelve years I have dealt by this operation with 54 true emergency cases admitted with obstruction late in labour; in some cases the mother had pyrexia and foul discharge, and the fœtus was dead and stinking. I have also dealt with a much larger number—probably twice as many women—in whom trial of labour had failed or who developed obstruction or inertia while under supervision, and who were delivered by orthodox lower uterine-segment cæsarean section after labour lasting for forty-eight hours or longer. I have not yet seen a patient develop peritonitis and none of the women has died.

Surely we cannot accept a maternal mortality-rate of 2·5% as a satisfactory standard when the usual transperitoneal operation is used after two days of labour. I have indeed tried the extraperitoneal approach on 5 occasions; but since in my experience peritonitis is not to be feared after the transperitoneal operation, I have give up any attempt to perfect my extraperitoneal technique. Most people would agree that this, by any method, is a more difficult operation; many accidents and dangers have been recorded, and the additional risk involved seems quite pointless. The worst complication I have seen after operation upon infected cases has been no more than superficial wound sepsis.

Woking. L. G. HIGGINS.

1. Young, J. S., Griffith, H. D. *J. Path. Bact.* 1950, **62** 293.

TUBERCULOSIS BEDS IN NORWAY

SIR,—Why not English patients for empty Norwegian sanatorium beds? This question is prompted by the long waiting-lists in England and by the elimination in many cases of such lists in Norway, thanks to the sustained efficiency of the campaign against tuberculosis in this country.

With a population of only 3·2 million, Norway is now provided with some 5000 beds in sanatoriums, coast hospitals, and "homes" for the tuberculous. There are also many beds for the tuberculous in several of the general hospitals staffed by eminent lung surgeons such as Holst, Semb, and Murstad. The turnover in sanatoriums has been greatly speeded up by earlier diagnosis and recent advances in treatment, and also by the shuttlecock circulation of patients between sanatoriums and hospitals in which various operations are performed. I am informed that at Mesnalien Sanatorium, where I was fortunate enough to undergo artificial-pneumothorax treatment as far back as 1908, this shortening and increased efficiency of treatment have set many beds free. Other sanatoriums and hospitals staffed by specialists in lung surgery are also ready to receive patients from abroad at charges which are moderate, partly because the Norwegian currency is "soft."

Inquirers interested in the subject should communicate with the Medical Superintendent, Mesnalien Sanatorium, Lillehammer, Norway, or with the Secretary-General of the Norwegian National Association against Tuberculosis, Nasjonalforeningen mot Tuberkulose, Incognitogate 1, Oslo, Norway.

Leitet, Sunnfjord, Norway. CLAUDE LILLINGSTON.

EARLY AMBULATION

SIR,—I was most interested in Dr. Goodall's article of Jan. 6. I should, however, like to join issue with him on the figures he gives for the estimated increased turnover in antenatal and puerperal patients effected by early ambulation.

In antenatal wards the majority of patients are suffering from toxæmia. The mainstay of the treatment of this condition is still bed rest. Ambulation means, as a rule, a return of the hypertension, œdema, and albuminuria. Ambulation can be used as a test of progress, and if improvement is maintained it may become possible to discharge the patient; but whether this is early or late does not depend on the wishes or whims of the doctor so much as on the ups and downs of the toxæmic patients under his care.

Two other types of patient, though not so numerous, probably are responsible for a large number of "blocked beds" in an antenatal ward. The first is the cardiac case needing long periods of rest between the 28th week and term; and the second is the case of antepartum hæmorrhage—suspected placenta prævia—in which the patient may be admitted for a month or six weeks before the fœtus is large enough to stand a reasonable chance of survival, and therefore before cæsarean section can be performed. In the former case obviously any exercise is contra-indicated, and in the latter ambulation may easily precipitate a further loss on account of the likely location of the placenta.

We would all gladly relieve the pressure on busy antenatal wards, but I am unable to see how Dr. Goodall arrives at his figure of a 15% increase in "throughput." In the puerperal wards the increase is estimated at 20%. I am afraid that the length of stay in these wards is much more often determined by such problems as slow gain of weight by babies, breast-feeding which takes a long time to establish, cracked nipples, and prematurity. Ambulation, early or late, does not often play much part in the speed of discharge.

Early ambulation is practised in the obstetric department of this hospital, and we have found the results uniformly satisfactory; but I cannot substantiate the suggestion that this method increases turnover.

Canadian Red Cross Memorial Hospital, Taplow. JOHN HENDERSON Obstetric Registrar.

ATHEROSCLEROSIS AND CHOLESTEROL

SIR,—In your leading article of Dec. 30 I am sorry not to find the name of Borst, one-time pathologist in the University of Munich, who first induced atherosclerosis experimentally, by administration of cholesterol to rabbits. Mention of this work does not detract from the value of the investigations of Anitschkov and others in this field.

Mariánské Lázně, Czechoslovakia. TH. OLBERT.

STETHOSCOPES

SIR,—Mr. Dickinson's letter of Dec. 30 overlooks Glasser's *Medical Physics* (pp. 1473–1490). May I add the following considerations to that description and to Mr. Dickinson's analysis?

Sounds depend for quality on the size of the source and its mode of vibration, on the qualities of the ear, and on the characteristics of the intervening space or instrument. Further, noises loud enough to drive the ear or other diaphragm into a non-linear pressure-displacement relationship produce beat-tones not present at the source.

The sensitivity of the ear varies with loudness to produce the well-known effect of one tone masking the presence of another. This effect explains why stethoscopes which do not transmit low notes apparently accentuate high-pitched ones.

The effect of the wave-pattern on the radiating surface upon the quality of the sound is well illustrated in percussion, where, with air-laden tissues beneath the chest wall, a comparatively large area depresses as the finger is struck. With liquid beneath the surface the tissues at each side of the blow rise up, producing a series of ripples over the chest surface resembling the disturbed surface of a pool into which a stone has fallen. The former produces a low-frequency note; the latter causes cancellation of low notes at the ear. For an equal number of vibrations the higher notes die away sooner and sound dull. Friction within the tissues also attenuates high frequencies more rapidly. The need with loudspeakers for a large baffle if low notes are to be reproduced also illustrates this point.

All stethoscopes have diaphragms. An artificial diaphragm is useful on an uneven surface, on a flabby surface which would fill a bell, and for quick application to a nervous child. Hairy surfaces produce unwanted crepitations with artificial diaphragms. A lax diaphragm may be rendered taut by pressure, with resultant modification to the frequency response; for all stethoscopes are—of necessity—acoustic filters transmitting certain tones with greater efficiency than others. No frequencies are amplified, for the stethoscope is a passive device.

Resonance associated with acoustic leaks may provide remarkably good efficiency—i.e., impedance matching of a large source to a small ear-drum—at a few selected frequencies. The common fœtal-heart stethoscope and the Laennec stethoscope with their resonant cavities and ill-fitting ear-pieces are splendid examples of this principle.

The efficiency of the Cammann stethoscope in common use depends upon the diameter of the chest-piece, upon the volume of dead-space which dilutes the vibration pressures, and upon the damping produced by turbid air-flow within small-bore tubes. Few find the instrument insensitive, but those who do may profit from larger bells, from less dead-space, and from using only one patent ear-tube. The tubes should be short and bifurcate near the chin. There seems to be an optimum internal diameter around 3 mm.

Frequency response depends upon tube-length and is alternately maximal and minimal at multiples of a quarter wave-length in air. There may thus be advantage in using tubes to each ear of different length. A leak in the air path in the form of an open side-tube, about 10 cm. long, reduces the low-note response and can be closed by pinching as required. A taut diaphragm, or one rendered taut by pressure upon the skin, modifies the frequency characteristic. For equal energy transmission the excursion of the diaphragm is inversely proportional to frequency. The displacement (x) depends upon the applied force (F) the mass of the diaphragm (M), its stiffness (S), and its effective viscosity or damping (R) according to the general equation, at any instant (t):

$$F = M\frac{d_2x}{dt^2} + R\frac{dx}{dt} + Sx$$

For a sustained note of frequency (f) this becomes:

$$\frac{F}{x} = R + j\left(wM - \frac{s}{w}\right) \quad \text{where } w = 2\pi f, \text{ and } j = \sqrt{-1}$$

Artificial diaphragms add little mass or damping to the chest wall, but when taut may greatly increase the stiffness, which term is seen to diminish in magnitude as the frequency is raised. This explains the relatively poor low-note response of diaphragm instruments and perhaps too of open bells pressed tightly to the skin.

Mr. Dickinson's remarks on a rug being gradually compressed may have an explanation in the changed viscosity. If he were wishing to compare the transmission properties of a rug with a thick sheet of paper the different ratio of density to Young's modulus and the different order of internal friction-damping between strands or molecules would provide an explanation on the above lines. This letter, with his, may suggest that there is some value in keeping to one's own stethoscope.

University College Hospital Medical School, London, W.C.1. NORMAN SMYTH.

AMIDONE OVERDOSAGE IN A CHILD

SIR,—The possible dangers of amidone (' Physeptone ') to children were well illustrated by a case admitted to the children's ward of this hospital on Dec. 28.

A girl, aged 4½ years, had been given ' Linctus Physeptone and Phenobarbitone,' as symptomatic treatment for suspected whooping-cough, on the afternoon and evening of Dec. 27. She took altogether gr. 1 of phenobarbitone and 24 mg. of physeptone over a period of about 6 hours. Next morning her parents found her lying comatose in bed at 8 A.M. The family doctor brought her up to this hospital, where she was admitted.

At that time she was very pale, deeply unconscious, with shallow respiration, narrowly constricted equal pupils, temperature 101°F, pulse-rate regular at 172 and respirations 34 per min. The fundi showed moderate bilateral papilloedema, without hæmorrhages or exudate. No abnormalities were detected in the heart and lungs. Both arms and thighs were flaccid, deep reflexes being absent, but there was well-marked bilateral ankle-clonus and the plantar responses were extensor. The urine contained a moderate amount of albumin and a few red cells and granular casts; no sugar. Lumbar puncture revealed a clear colourless fluid under pressure, normal in cytology and chemistry. The total white-cell count was 15,000 (polymorphs 12,600, lymphocytes 2100, monocytes 300) per c.mm. Her blood-urea was 38 mg. per 100 ml. An X-ray film of the chest showed no abnormality. A pernasal swab did not grow *H. pertussis*.

We were fortunate in knowing the exact amounts of the drugs consumed, so treatment was begun as follows: continuous oxygen; hourly intravenous or intramuscular injections of 2 ml. of nikethamide for 6 doses; procaine penicillin intramuscularly to avert lung infection; and an enema of 20% magnesium sulphate solution to reduce intracranial pressure. Feeds were given by stomach-tube.

The child remained unconscious for her first 24 hours in hospital and was drowsy and uncoöperative for a further 48 hours after that. A coarse intention tremor became evident as recovery set in, but this lasted only a few days. A slight increase in tone was noticed in the left arm but this also passed off. The papilloedema had disappeared by the 2nd day. The urine was normal by the 4th day. The temperature, pulse, and respirations gradually returned to normal by the 6th day. At the time of writing, 12 days after her admission, the child is apparently normal in all respects.

The average dose of physeptone for an adult is said to be 10 mg. three-hourly or four-hourly, though 30 mg. has been given at the same intervals without untoward effect. On an age/weight basis, ignoring any possible intolerance during childhood, this child should not have

had more than 2·4 mg. four-hourly. Giving the phenobarbitone at the same time may have enhanced the depressant effects of both drugs.

The conclusions to be drawn seem to be (1) that if a D.D.A. preparation made up in a pleasantly flavoured linctus is prescribed for children, strict precautions against overdosage must be taken; and (2) that physeptone and phenobarbitone may be dangerous in combination. The case demonstrates once again that giving young children cough mixtures containing powerful drugs can be a hazardous step. We would be interested to hear of any other cases of coma due to overdosage with physeptone.

We are grateful to Dr. C. F. Harris for encouragement and permission to report this case.

St. Bartholomew's Hospital, London, E.C.1. R. C. ROXBURGH
D. MUNRO-FAURE.

*** Messrs. Burroughs Wellcome, the manufacturers of physeptone linctus, have circulated a letter to all doctors suggesting precautions to be taken when prescribing it for children. The properties and dangers of amidone are discussed in a leading article on p. 156. —ED. L.

SMALLPOX AT INFECTIOUS-DISEASES HOSPITALS

SIR,—An account of the outbreak of smallpox at Brighton is given in your issue of Jan. 6. Comment is made upon the poor vaccination state of some members of the staff, and attention is drawn to the memorandum R.H.B.(50)75, issued in August, 1950.

The occurrence of smallpox amongst the nursing staff of the infectious-diseases hospital reflects the deplorable state of the nursing situation in such hospitals at the present time. During the past few years infectious-diseases hospitals have been struggling under very grave conditions with the nursing situation in order to admit and care for their patients.

As an illustration, figures are given below of the nursing personnel at Lodge Moor Hospital, Sheffield (a similar state of affairs exists, no doubt, all over the country):

Year (December)	*Beds in use*	*Ward sisters*	*Staff nurses*	*Assistant nurses*	*Student nurses*	*Ward orderlies*
1940	378	10	44	11	31	0
1944	460	10	63	2	42	0
1950	360	11	7	9	33	54

7 staff nurses and 54 ward orderlies are performing the nursing functions in 1950 which required 63 staff nurses in 1944. Is this good nursing? The orderlies are mostly non-resident, and are made up of many classes and types of persons, including Germans, Indians, Poles, Austrians, and Italians, supplemented by university students during their vacation. Included in the 54 orderlies are 10 males. This class of staff is most transitional, the hospital only having their services for short periods—in some instances only for a few weeks—whilst at the same time the hospital is struggling to keep its doors open in order to care for the sick.

In order to produce an effective "iron curtain" around the fever hospital to prevent the spread of smallpox, a more permanent type of staff is required which can be efficiently vaccinated to prevent any spread of the disease should it occur or, unfortunately, be introduced into the hospital.

The terms and conditions for nursing staff at fever hospitals are similar to those for staff at general hospitals. The latter have the advantages of more attractive work and a more convenient situation; yet no consideration seems to be given to the hardship and risk taken by staff in fever hospitals. Surely, there is something radically wrong today in infectious-diseases hospitals when we encounter the male adjusting the diapers of the toddler, and when the welfare of our children, stricken with fever, is left to the care of the alien or the ward orderly?

Lodge Moor Hospital, Sheffield. JOSEPH M. KENNEDY
Medical Superintendent.

CORTISONE AND INFECTION

SIR,—Recent studies on 'Cortisone' have dealt with the frequency of spontaneous infections in animals[1] and the possibility of enhancing experimental infections.[2]

We have studied the effect of cortisone on experimental granulomatous infection of the rat following the subcutaneous injection of *Coccidioides immitis* Stiles. Post mortem the control rats showed a local tubercle-like granuloma without any generalised infection, whereas of 5 cortisone-treated animals 3 showed a diffuse infection of the spleen and lungs, the production of connective tissue being greatly inhibited everywhere.[3]

INCIDENCE OF SPONTANEOUS INFECTIONS WITH ADMINISTRATION OF CORTISONE

Animal	No. of animals	Disorder	Cortisone		No. of infected animals
			Daily dosage (mg.)	Length of treatment (days)	
Rat	8	Nil	1	70	6
Rat	14	Nil	5	15–20	6
Rat	11	Carbon tetrachloride hepatic cirrhosis	1	20–45	3
Rat	2	Alloxan diabetes	5	15	2
Rat	12	Endocrine kidney	10	10–15	8
Rabbit	4	Nil	10	13	2

In other experiments we have also noted that cortisone determined the appearance of spontaneous infections (see table): necrotic exudative foci were commonly found in lungs, heart, and/or liver. *Pasteurella muricida* (Meyer and Batchelder) has been obtained from the lesions in the rat.

Such pathological findings were never observed either in normal animals or in animals treated with deoxycortone acetate or acetoxypregnenolone under similar experimental and environmental conditions.

Anatomo-Pathological Institute, University of Milan; and Farmitalia Research Laboratories, Milan. C. CAVALLERO
G. SALA.

TREATMENT OF PERFORATED PEPTIC ULCER

SIR,—The late Mr. A. Hedley Visick, of York, like Mr. Hermon Taylor, was stimulated by Bedford-Turner's letter and his own repeated finding of sealed perforations to try out the conservative treatment of acute perforated peptic ulcer. His conclusion, based on his own admission on a small number of cases, and published two years before his death (the corrected reference is *Brit. med. J.* 1946, ii, 941), was that if the perforation was small and spillage minimal the cases did well, but that it was in precisely this group of cases that operative mortality was lowest.

He too emphasised that the management of these cases was far more exacting without operation, and responsibility for this could not be delegated by the consultant until his staff had had considerable experience of the method. It became his practice to operate on all obvious and early cases, and to close the perforation without peritoneal toilet or drainage, reserving watchful conservative treatment for cases where the diagnosis was doubtful, or where the patient was definitely unfit or doubtfully fit for operation. With a wise combination of the two methods he hoped to reduce greatly the total mortality. There was to be one exception; any case of second perforation was to be treated conservatively

1. Antopol, W. *Proc. Soc. exp. Biol., N.Y.* 1950, **73**, 262.
2. Spain, D. M., Molomut, N. *Amer. Rev. Tuberc.* 1950, **62**, 337. Hart, P. D'A., Rees, R. J. W. *Lancet*, 1950, ii, 391.
3. Redaelli, P., Cavallero, C., Borasi, M. Sala G., Amira, A. *Experientia* (in the press).

and given the benefit of a radical gastrectomy during convalescence, thus obviating an extra operation.

While the decision as to which is the better treatment for the straightforward case is likely to remain unsettled for many years, two points of practical importance emerge now:

1. All cases diagnosed as perforated peptic ulcer should have gastric aspiration carried out in the reception room as soon as they reach hospital. If there is delay in admission or a long journey is necessary it should be done by the first doctor to see them after the occurrence.

2. Our conception of the prognosis of the patient who is not fit for operation is materially changed.

Bristol. K. D. J. VOWLES.

SIR,—Your issue of Jan. 6 contains two more articles supporting, with varying enthusiasm, the adoption of conservative or "aspiration" treatment of perforated peptic ulcer. I would support, as I have done before,[1] the cautious attitude expressed in your leading article.

Sealing of a perforation of any viscus depends on an interaction of a number of unknown factors. Local tissue response to infection, the nature of the infecting organisms, and the individual resistance to these organisms are concerned. This plastic fibrinous reaction with or without the local adhesion of omentum is as difficult to forecast in cases of perforated ulcer as in appendiceal inflammation or perforation. Mr. Stead's case 2 is a perfect example of the failure of this reaction to occur despite the aid of the conservative régime. I have seen this failure of local plastic or other sealing action in early or late perforations. I am sure it is quite common and it will be recognised much more often (and on the post-mortem table) if conservative treatment is widely adopted.

Mr. Hermon Taylor is, I believe, wrong in minimising the risks of incorrect clinical diagnosis. The accuracy achieved by his team is above the average. In a recent series of 351 consecutive acute abdominal conditions submitted to operation I dealt with 40 perforated ulcers. In 4 of these I made the wrong diagnosis pre-operatively. This compares with DeBakey's figure of 14·5%, representing the diagnostic error in a very large series. Acute appendicitis is the commonest mimic of peptic-ulcer perforation, and I cannot agree with Mr. Stead that a 6-hour delay in operating for this condition is acceptable in any age-group.

In my 351 cases I further diagnosed perforated peptic ulcer with confidence in 5 cases—at operation quite different conditions were found. All required urgent surgery. As Mr. Hermon Taylor writes, this is a most important problem; but his unusually fortunate experience in this direction minimises its importance.

To my mind this high rate of diagnostic error condemns the general adoption of conservative treatment. There are many other objections. Perhaps it is wise to re-state what we hope to achieve by operation. Firstly, the diagnosis is confirmed. Secondly, by simple suture of the ulcer one arrests a leakage which might otherwise be continuous for many more hours. Thirdly, one finds in most cases after operation a patient rapidly and dramatically improved and one who, in a very high percentage of cases, has a smooth convalescence. With all the armamentarium at our disposal I believe the mortality-rate should be kept below 5% and the incidence of complications less than that described in the various series treated conservatively.

I do not know when dangerous organisms get into the peritoneal cavity. Sometimes they may escape in the first gush of gastric or duodenal contents. Sometimes they may appear many hours after perforation. But I do know that the process is a cumulative one and the sooner it is stopped the better. What can aspiration achieve to this end? In gastric perforations I concede that it may on occasion be completely effective. In the more frequent duodenal perforations gastric suction may achieve little; and, as Mr. Stead rightly points out, it cannot decompress the duodenum, which soon fills with fluid welling up from the inevitable small-intestine ileus associated with peritoneal infection. Mr. Stead recognises this factor but in another paragraph suggests that the "barrier" formed by a "spastic pylorus" is beneficial.

Gastric aspiration as an immediate pre-operative measure in cases of perforation is of great value. Post-operative gastric aspiration is an essential adjunct to operative treatment. But the conservative régime is quite clearly shown by both Mr. Hermon Taylor and Mr. Stead to be a ticklish business, and I would deplore its adoption other than in the most exceptional circumstances.

Department of Surgery, University of Liverpool. JOHN A. SHEPHERD.

1. *Brit. med. J.* 1950, i, 438.

Obituary

JAMES SWAIN

C.B., C.B.E., M.D., M.S. Lond., F.R.C.S.

James Swain was for many years one of the outstanding figures in surgery in Bristol and the west of England. Modern surgery in the west may be said to have begun with Greig Smith, who reigned without a rival in hospital and private practice during his too brief career. When Greig Smith died at an early age in 1897, James Swain had already been on the staff of the Bristol Royal Infirmary as assistant surgeon for five years, and for a time there was only one other pure consulting surgeon in the town. It was the moment when doctors and patients were beginning to realise the great possibilities of surgery in general, and abdominal surgery in particular, and Swain, who was thoroughly competent and had the art of getting on with people without quarrelling, soon found his services in demand over a wide area.

[Bright

He came of a Hertfordshire family, and he entered the Westminster Hospital by an entrance scholarship in 1879, qualifying in 1883. Two years later he obtained the London M.B. with honours, proceeding to the M.D. in 1887, the F.R.C.S. in 1889, and the M.S. in 1890. After holding resident appointments at the Westminster he became house-surgeon, and then senior resident officer, at the Bristol Royal Infirmary. Those were stormy days. The students were a particularly turbulent crowd; he was a stranger, small of stature, and an inveterate talker, and he had his work cut out to maintain discipline.

In 1892 he became assistant surgeon and commenced consulting practice in Clifton. After Greig Smith's death it was a nice point who should succeed him as professor of surgery. There were two general hospitals in the town, bitterly jealous of one another; so it was thought expedient to have a professor from each, and the duties were shared by James Swain and C. A. Morton. They were both good, but not outstandingly good, teachers; and indeed Swain was really too busy to put in a great deal of time with the students. In 1909, the University College became the University of Bristol, and he was appointed to the university chair. In his earlier years he was a prolific writer; his first paper on perityphlitis appeared in 1885. From 1897 to 1904 he was an associate editor of the *Bristol Medico-Chirurgical Journal*, and he also edited the sixth edition of Greig Smith's *Abdominal Surgery*.

During the 1914–18 war he became consultant surgeon to the Southern Command, and Bristol saw him but seldom. For his services in France as consultant surgeon

he was mentioned in despatches, and he was appointed C.B. in 1917 and C.B.E. in 1919. He was one of the British delegates to the inter-Allied congress on the treatment of war wounds which sat in Paris during the later years of the war.

He gave up the chair of surgery to Hey Groves in 1920, two years before he reached the age-limit, when he retired from practice because of eye trouble. He went into the country to live, and became a justice of the peace for Somerset. During the past twenty years, he was only occasionally seen at medical functions in Bristol.

He married in 1899 Hilda, daughter of Dr. A. J. Harrison, and there is a son and a daughter of the marriage. He died on Jan. 6, at the age of 88.

A. R. S.

GEORGE CLARK CATHCART

M.A., M.D. Edin.

Dr. George Cathcart, probably the most senior of British otolaryngologists, died at Broadstairs, after a short illness, on Jan. 4, at the age of 90. He was born in Edinburgh, the son of James Cathcart, who was the greatest friend of Robert Louis Stevenson's father. From Edinburgh Academy and Loretto he went to Edinburgh University, where he graduated M.A. in 1883 and M.B. in 1891. After holding a house-appointment at Edinburgh Royal Infirmary, he came to London as a resident at the Children's Hospital, Great Ormond Street, later becoming house-surgeon at the old London Throat Hospital. In due course he was appointed honorary surgeon to the hospital and after its amalgamation with the Throat Hospital, Golden Square, he was consulting surgeon to that institution. He was also appointed consulting laryngologist to the Mount Vernon Hospital, when it was a hospital for pulmonary tuberculosis.

Dr. Cathcart came of a family of musical enthusiasts. He had himself been a pupil at Naples of Scafati, last of the teachers of the old Italian *bel canto*, to help to cure a stammer, and his early contributions to medical literature were mainly on problems of voice production. He was convinced that the then current English practice of tuning orchestral instruments to the higher concert pitch, instead of French pitch, was one of the chief causes of vocal strain among professional singers, and to prove his point he instituted the famous Promenade concerts at the Queen's Hall, London, with his friend Henry Wood as their conductor. He took great pride in the enduring success of the annual series of concerts —though he personally had lost a considerable sum of money in launching them—and of their important influence on musical appreciation in England. Particularly while Sir Henry Wood was still alive, he was happy to be an honoured guest at them year after year.

In 1926 Dr. Cathcart published a revised edition of his friend Hunter Tod's book *Diseases of the Ear*; and as this was then twenty years old, it was largely rewritten. It was favourably reviewed, and a year or two later he produced a small book on the *Treatment of Chronic Deafness*, which went into a second edition in 1931. He was convinced of the effectiveness of the electrophonoide method of Zünd-Burguet in the alleviation of deafness. In his hands this method undoubtedly achieved good results in many troublesome cases, though treatment had to be repeated once or twice a year. He was disappointed that few other otologists persevered with this treatment. He was a careful and conscientious surgeon, though his range was not wide, and most of the leading general practitioners in the West End of London reposed their trust in his judgment. Freemasonry was almost his religion and he was a past master of the University of Edinburgh lodge and a member of Grand Lodge.

"Cathcart was above all a kindly man," writes S. H., "and although it is some forty years ago I still remember the warm welcome which he gave me when, knowing little of E.N.T. work, I became an assistant surgeon at the London Throat Hospital. He was unquestionably good at his job, but I always looked upon him more as a philosopher than a surgeon. He had whimsical, inquiring eyes with a sense of humour in them, and a broad outlook with many interests besides his profession. Widely read, he was always willing to discuss any new proposals in connection with his work. He was one of the pioneers when otolaryngology was changing from a branch of medicine and taking its rightful place as a surgical specialty."

PHILIP FRANKLIN

F.R.C.S., Hon. F.A.C.S.

Mr. Philip Franklin, the well-known otolaryngologist, died suddenly in London on Jan. 7, aged 70. Two days before his death he was lunching at the Royal Society of Medicine, cheerful and volatile as ever, apparently about twenty years younger than his real age, and looking forward to a voyage to South Africa next week.

He had had a varied and interesting career. Born in San Francisco in 1880, he was educated at Lowell High School there, at Heidelberg, and in London at King's College, King's College Hospital, and Middlesex Hospital. In 1907 he took the Conjoint qualification, going on to take the F.R.C.S. in 1913.

He began his medical career as a research scholar at the cancer laboratories of the Middlesex Hospital, and he went into otolaryngology almost by accident, through meeting a friend in the street who persuaded him to apply for the vacant post of house-surgeon at the old London Throat Hospital, which afterwards amalgamated with the Throat Hospital, Golden Square. Franklin later became assistant surgeon at the Metropolitan Ear, Nose, and Throat Hospital and ear, nose and throat surgeon to the Italian Hospital.

In 1925 he arranged a successful meeting in London of the Inter-State Postgraduate Assembly of North America, and not long afterwards he was proud to have been elected one of the few honorary fellows of the American College of Surgeons. Through a friend in Vienna he heard that the famous Onodi collection of anatomical specimens, which threw a new light upon the anatomy of the nasal sinuses, was privately in the market, and he acted as secretary and treasurer of a fund which acquired the collection for the museum of the Royal College of Surgeons.

Franklin introduced, with considerable success, in the early '30s, the treatment of hay-fever and vasomotor rhinitis by ionisation, but probably his most important work was that connected with the early education of deaf-mutes, on which he published a paper in this journal in 1935. He was then otologist in charge of the research clinic for deaf-mutes at the Infants Hospital, Vincent Square, and he brought new instruments from America, the audio-frequency-amplifier and the teletactor, which conveyed vibration stimuli to the ears and finger-tips. He considered that these methods should be begun as early as the second year of life and that they hastened the mental development of the deaf-mute infants, encouraged the acquisition of natural voice production, and might even increase residual hearing. It was a great disappointment to him that the outbreak of war in 1939 brought this work to an end. He himself—at the age of 60—became a major in the R.A.M.C., acting as otologist to military hospitals in the south of England.

In 1903 Mr Franklin married Ethel, daughter of the late Mr. Lewis White; she died tragically, together with a guest and members of the domestic staff, in a fire at their house in Wimpole Street in 1935. They are survived by a daughter and by two sons—Dr. A. White Franklin, the pædiatrician, and Dr. J. L. Franklin, the dermatologist.

SIR ARTHUR HALL

S. R. writes: "At the first meeting of the Radium Commission, Hall put forward an outstanding conception of its purpose which guided the commissioners for the whole of its life. The obligations undertaken by the new body could, he affirmed, only be fulfilled if confidence were established between the commission and the principal radiotherapeutic centres in the country. The response to action by the commission on these lines was unanimous and within a year an active impulse ran through the newly established national centres, with inestimable benefit to those suffering from cancer."

Mr. Charles West's first wife, who died in 1935, was Miss Esther McCrossan. His second wife, whose name we gave incorrectly last week, was formerly Miss Kathleen Thomas.

Notes and News

REGISTRARS

In a memorandum on "displaced registrars," the Fellowship for Freedom in Medicine outlines the factors which, in its view, have given rise to the present situation. The memorandum states: "Although the number of hospital beds has not greatly increased since July 1948, the hospital O.P. departments have often been overwhelmed by the patients who previously would have been properly doctored by their G.P.s and would never have sought hospital care. At the same time consultants were no longer encouraged to work the long hours to which they had become accustomed because of the system of payments for a definite number of $3^1/_2$ hourly sessions a week. Therefore the needs for these trainee-consultants was greatly increased." The present situation has been brought about "by the precipitate introduction of the N.H.S., the dislocation of the balance of work between G.P.s and hospitals, and by thoroughly bad planning by the Ministry of Health. The Royal Colleges had been misled into thinking the consultant services were to be expanded to a much greater extent than now seems probable, and they must accept some share of responsibility for the present impasse."

Among the steps recommended by the fellowship are the following: (1) The position of general practice and of the family doctor should be re-established. (2) "It must be possible for some of these 'displaced registrars' to enter general practice and still maintain their interest in hospital work. The present tendency of hospital Regional Boards to abolish G.P. hospitals must cease. . . . The present difficulty would, in considerable measure, be overcome if the buying and selling of the goodwill of general practices were resumed: at the same time private practice should be encouraged, thereby creating a healthy rivalry between the State service and private practice (to the benefit of both)—as has been consistently advocated by the Fellowship." (3) The total number of consultants needed both in the service as a whole and in each specialty should be fixed as soon as possible. "It is absurd to suggest, as the Minister has done, that the number of trainee-consultants should be fixed first, and the overall number of consultants laid down at a later date. It is also important to let the profession know which specialties offer the most vacancies in the future, so that a trainee may change from one branch to another in his earliest years." (4) There must be a review of the needs of the service so that the number of registrars needed can be fixed. "Then, over a period of at least two or three years, the present holders of these posts should be encouraged to enter other fields of medicine, if they are not likely to be made consultants in their present field."

The fellowship deprecates the "precipitancy of the Minister's direction that a considerable number of registrars will not have their contracts renewed. . . . It is a waste of valuable experience and of money spent in training, and manifestly unfair to the men concerned. . . . It should be realised that the average age of the senior registrar is 37, and most of them have wives and children." The memorandum concludes that the Minister should withdraw his directive, and consult with all medical interests concerned.

ALL-ROUND HELP

Under the National Health Service responsibility for the care of the patient is shared by different administrative authorities. While he is in hospital he is under the possibly remote wing of a regional hospital board; his new teeth are one of the cares of a local executive council; his home help is, when possible, provided by a local authority. Administratively this division is perhaps inevitable, but the patient does not obligingly respond by dividing his illness into sharply defined stages. The committee set up by the Institute of Almoners, under the chairmanship of Prof. A. L. Banks, F.R.C.P., to consider the patient's care and aftercare wisely point out[1] that the patient still wants the kind of all-round help he used to get in less complicated days from his family doctor. If the health service is to succeed the patient must go on getting this kind of help, and he can only do so if there is effective coöperation between the different parts of the health service. In particular, the almoners consider that the phrase "care and aftercare" must be widely interpreted, for the medical and social needs of the patients are often closely related. The committee recommend that local consultative committees should be set up, composed of doctors, social workers, and local health authority officers, to consider the coördination of medicosocial care of the patient.

1. *The Almoner*, January, 1951, p. 359.

MEDICAL SERVICES OF THE U.S. ARMED FORCES

The United States department of defence has set up an Armed Forces Medical Policy Council under the chairmanship of Dr. Richard L. Meiling (*New York Times*, Jan. 6). The new council is charged with establishing joint programmes among the three Service medical departments and promoting standardisation of technica activities. Its members include Major-General Raymond W. Bliss, Rear-Admiral Clifford A. Swanson, and Major-General Harry G. Armstrong, surgeon-generals of the three Armed Forces. By the medical draft law passed in the last Congress, about 200,000 doctors and dentists under the age of fifty have been arranged in four groups according to their call-up priority. The defence department has now announced that all in priority no. 1 and some in priority no. 2 will be called up by July. The first priority, about 14,000 men, is composed of men who received their education at government expense and who have had little or no active military service. The second priority includes men who received some or all of their education at public expense and who have had comparatively little of active duty.

University of Oxford

On Dec. 16 the following degrees were conferred:

D.M.—J. C. Pease, J. F. Monk.

B.M.—M. J. V. Bull, C. G. Miller, R. M. Morris Owen, W. D. E. Hamilton, J. G. Wallace, J. G. Millar, E. F. H. Murphy, H. E. Milligan, R. G. Mitchell, B. S. Freeman, D. E. Hone, J. K. Pearce, G. M. Scott, J. P. Bingle, J. R. Golding, G. T. Smerdon, G. P. Burn, Constance M. Ridley, Ruth Lister, Jane M. Robinson, Jean McI. Smellie, Diana L. Spencer, Gillian Rowe-Dutton, *I. B. Denny, *R. H. Hill, *Barbara Sellman.

* In absentia.

University of London

At recent examinations the following were successful:

M.D. Branch I (*medicine*).—D. M. Abelson, Michael Atkinson, A. G. Bearn, G. A. Bedwell, J. D. Blainey, S. O. Boldy, Leon Brotmacher, F. G. Campbell, H. E. Claremont, R. S. C. Couch, J. S. Crowther, Léon Cudkowicz, A. E. Doyle, C. J. Earl, T. R. L. Finnegan, Philip Freedman, C. N. Grainger, *P. C. Harris, A. R. Harrison, Arthur Hollman, Gwyn Howells, P. E. Jackson, C. L. Joiner, D'Almero Kok, M. J. Livera, Joseph Luder, J. C. Macaulay, R. A. Moir, C. D. Routh, Benjamin Schwartz, L. G. Scott, L. V. Sthyr, P. P. Turner, Albert Venner, R. L. Ward, R. G. Welch, Joan C. Wells, R. R. Willcox, Irvan Yentis.

M.D. Branch II (*pathology*).—Naomi Datta, Deborah Doniach, *C. H. Gray, W. J. Hanbury, A. B. Hill, G. R. F. Hilson, J. D. O'D. Lavertine, G. L. Le Bouvier, A. J. M. Reese, R. B. H. Tierney.

* University medal.

M.D. Branch III (*psychological medicine*).—A. J. P. Oldham.

M.D. Branch IV (*midwifery and diseases of women*).—J. G. Dumoulin, D. W. James, J. C. S. Leverton.

M.D. Branch V (*hygiene*).—D. J. Davies, R. A. G. Smith.

M.S. Branch I (*surgery*).—Arnold Elton, T. W. Rowntree.

University of St. Andrews

At recent examinations the following were successful:

M.D.—K. R. Keay (with commendation).

M.B., Ch.B.—J. D. Adam W. M. Anderson, A. A. Brand, V. W. M. Francis, R. J. D. Gibson, Elizabeth H. Halliday, William Kelso, W. D. Lobban, Duncan MacDonald, Ida V. MacDonald, T. G. Sprunt, R. A. Yorston.

University of Glasgow

On Jan. 13 the following degrees were conferred:

M.D.—H. E. Hutchison (with honours), A. G. McCarey, A. N. MacPhail (with commendation), F. A. Smith.

M.B., Ch.B.—J. I. Adam, W. D. Alexander, W. L. Birrell, Phyllis J. Bishop, A. H. Cassels, Gerard Church, D. W. Clementson, Betty Cowan, E. A. Cresswell, Margaret J. Croall, G. M. Davidson, Margaret J. Devine, Kerr Donald, I. B. R. Duncan, G. P. A. Evans, A. S. Ferrie, I. H. Gardner, J. M. B. Garland, D. H. Goold, Henry Graham, J. H. Grant, Theresa Grant, Alexander Harrow, J. H. Henderson, T. J. G. Howie, G. A. Jamieson, R. D. Laing, J. D. Leonard, George Lochrie, G. Y. McCririck, R. W. D. Macdonald, Malcolm McEwen, N. P. Mackay, E. D. Mackie, Letitia S. Macleod, J. L. McPheat, Frances I. Melrose, I. A. Millar, D. B. Miller, M. E. Mowee, John Owens, T. G. Parker, W. J. Patterson, T. C. Peden, Elizabeth Primrose, D. J. Reilly, M. J. Scott, J. D. A. Shedden, D. D. G. Simpson, J. G. Stewart, D. H. Sutherland, Thomas Taylor, N. A. Todd, G. R. Veitch, Marion M. Whitelaw.

Memorial to Mr. Girdlestone

Lord Nuffield has given £10,000 to the Nuffield Orthopædic Centre, Oxford, to found a scholarship in memory of Mr. G. R. Girdlestone, whose obituary we published last week. The scholarship is to enable doctors from overseas to spend some time working at the Wingfield-Morris Orthopædic Hospital. Details of the scholarship will be announced later.

Royal College of Surgeons of England

At a meeting of the council on Jan. 11, with Sir Cecil Wakeley, the president, in the chair, Prof. F. A. R. Stammers was admitted to the court of examiners.

It was decided to institute a department of pharmacology at an early date.

A replica of the master's chair of the Company of Surgeons, which was destroyed by enemy action, was received from Mr. V. Coppleson and other fellows of the Royal Australasian College of Surgeons.

The following diplomas were granted jointly with the Royal College of Physicians:

D.A.—Frank Alberts, B. P. Armstrong, H. I. O. Armstrong, Fazlolloh Bakhshayesh, Kathleen Blott, R. C. Brown, Henry Collier, L. F. G. Cruickshank, Sylvia Danks, Phyllis M. de Saram, F. G. Domaingue, J. R. Elliott, J. R. Forsaith, Beryl M. Goetzee, J. A. Griffiths, G. C. A. Jackson, P. S. Jenkin, E. L. Littler, P. L. McGwinn, L. V. Martin, Joan C. Mason, Gordon Mason-Walshaw, Rustam Ali Nabi, Catherine E. D. Nash, H. G. Neill, D. M. O'Donoghue, Maureen O'Driscoll, J. J. Polland, Marjory A. Pollock, D. R. Rigg, A. R. Ryan, R. C. O. Saunders, E. R. Sinton, Elisabeth B. Smith, Matthew Spence, R. J. Vale, Harinandan Prasad Varma, G. J. G. M. Vourc'h.

D.C.H.—Emily M. Frazer.

D.I.H.—M. M. Lewis, I. S. Maclean, H. T. Phillips, R. K. Phillips, A. W. Smith, J. L. Walsh.

D.L.O.—V. D. Bear, Betsy Brown, Ghulam Nabi Dar, James Freeman, A. E. W. Gregson, A. J. Gunning, H. S. A. Henry, D. G. H. Hollis, W. P. F. Kearney, Isabella Kingan, P. W. E. Moore, Asghar Nizami, K. R. Ogilvie, P. B. O'Neill, Daryao Singh, C. W. Smith, J. R. Watson.

D.M.R.D.—John Adam, Chalmers Allen, Alec Attwood, James Barr, Satyabrata Bose, A. W. Box, G. A. Burfield, D. E. Fletcher, A. J. M. Griffiths, K. E. Jefferson, A. W. R. Jenkins, J. R. Kirby, J. K. McMyn, C. P. Moxon, Onkar Nath Saxena, Himadri Kumar Sen, R. M. S. Terry, P. W. Wishart.

D.M.R.T.—J. W. Boland, E. T. Feldsted, A. M. Goldstein, N. D. M. Harvey, Mohammad Ramzan.

D.P.M.—Abdul Aseem Aziz, Anne Bolton, Stuart Brest, T. S. Davies, C. C. Evans, E. F. B. Forster, Safa Eldin Hamid, H. B. Jones, D. M. Leiberman, A. M. Shenkin, Kirpal Singh, C. A. Storr, Reginald Warnecke, Joseph Zelmanowits.

D.T.M. & H.—E. G. R. Butler, Abdurrahman Mohammed Khan, Ambrosio Reyes, Nivedita Sen, C. G. F. Smartt, G. A. Smith.

At the monthly dinner of the college on Jan. 10 brief speeches were made by Sir Godfrey Huggins, F.R.C.S. (prime minister of Southern Rhodesia), Mr. V. M. Coppleson, F.R.C.S. (Sydney), Prof. C. A. R. Schulenberg, F.R.C.S. (Pretoria), Dr. J. L. Rowbotham (Boston), and Dr. A. Bassett (Toronto). An exhibition in the Hunterian Museum had been arranged by Prof. Geoffrey Hadfield, and the President and Lady Wakeley took a party of guests through the residential college, where some 25 postgraduate students now have temporary homes. When the Nuffield College of Surgical Sciences is built on the east side of the college there will be accommodation for 100 postgraduates and visiting surgeons.

Society for Cultural Relations with the U.S.S.R.

The medical committee of this society is holding a discussion on Monday, Jan. 29, at 8 P.M., on Recent Controversies in Soviet Medical Theory based on the work of Pavlov, A. D. Speransky, Bykov, and O. B. Lepeshinskaya. Dr. Leonard Crome is to open the discussion, and Dr. J. S. Horn will also speak. Tickets (1*s.* 6*d.*, members and students 1*s.*) may be had from 14, Kensington Square, London, W.8.

Coördination in the National Health Service

Representatives of local authorities, regional hospital boards, executive councils, and the Scottish Health Services Council, met in Edinburgh on Jan. 10 for a conference, under the chairmanship of Sir George Henderson, secretary to the Department of Health for Scotland. The object was to give those responsible for the day-to-day working of the service an opportunity to discuss their experiences, and to see whether within the present framework there are any ways in which the local-authority services, the general-practitioner services, and the hospital and specialist service may be better linked. Among the problems discussed were maternity and child welfare, the care and treatment of the chronic sick and the tuberculous, the interchange of health records and statistics, the reallocation of hospital beds, and the relationship of the general practitioner with the hospital specialist. It was unanimously agreed that in each area facilities should be provided for convenient and expeditious discussion of all difficulties and problems of coördination at all stages of responsibility for the health service; but local initiative should decide how this should best be done—whether by the appointment of special standing committees or otherwise. It was also felt to be important that the form of these facilities should be agreed on by the three main partners in the service and that they should be made known to all grades of staff.

Superannuation Rights

Medical and dental officers and senior nurses who take a post for not more than three years with the United Nations Organisation or its specialised agencies—such as W.H.O. or F.A.O.—or with another intergovernmental organisation may, if they wish, retain their superannuation rights under the National Health Service. This right will also extend to posts in certain foreign universities and public institutions approved by the Government. Further particulars are given in circular R.H.B. (51)1.

Inflation of Practitioners' Lists to be Ended

The Ministry of Health announces that steps are to be taken at once to put on a more accurate basis the records of people on doctors' lists. National Health Insurance entry cards without National Registration numbers now in the nominal indexes of executive councils are to be matched with the appropriate portion of the local "live" National Registration maintenance registers; and then, by a central clearance operation based on National Registration numbers, duplicate and other redundant entries are to be eliminated. Executive councils have been asked to aim at completing this operation by Sept. 30 this year. While it is being carried out, the Practitioners' Fund will be distributed between executive councils according to the number of people on doctors' lists at Jan. 1 this year.

National Dried Milk for Invalids

The Ministry of Food announces that, as supplies of the proprietary brands of infant milk foods are now plentiful, 'National Dried Milk' after Feb. 28 will no longer be available to invalids (including patients suffering from steatorrhœa, cœliac disease, and tropical sprue). From that date, national dried milk will normally be reserved for children under 2 years old, to whom it is supplied as an alternative to liquid milk at the reduced price of $10\frac{1}{2}d.$ a tin, or free, under the welfare foods service. The Ministry will, however, consider granting supplies to children over 2 years of age or to expectant mothers who are normally entitled to liquid milk at $1\frac{1}{2}d.$ a pint, or free, under the welfare foods service, on presentation of a medical certificate saying that they should have dried milk instead of liquid milk.

Awards for Blood Donors

The Ministry of Health announces that awards are to be made to long-service blood donors who have given at least 10 donations of blood since September, 1939. Women will receive a brooch and men a lapel badge on which there is a design, which has been approved by the King, showing two interlocking hearts surmounted by the crown and resting on a scarlet background. There will be three classes of award: silver-gilt for at least 50 donations, silver for 25 donations, and bronze for 10 donations. There are now nearly 400,000 donors in the National Blood Transfusion Service, and it is estimated that about 200 will be entitled to the silver-gilt award, 5000 to the silver, and 70,000 to the bronze. The Princess Royal has consented to present the silver-gilt awards on April 3 at the Royal College of Surgeons. Forms of application for the award can be obtained from the regional blood-transfusion centre where the donor is enrolled.

Community Care Teams

Speaking at the annual meeting of the National Association for Mental Health on Jan. 12, Dr. Alfred Torrie, the medical director, urged the importance of treating mental illness in homes and factories while still in its early stages. This made him regret all the more that since the National Health Service had started the community care teams which the association had previously managed to run in all 12 civil defence regions had been reduced to 2. These teams had put people in touch with social agencies, and by working with the family doctor had often been able to arrange for early help which prevented the development of mental illness. They had also halved the relapse-rate among people discharged from mental hospitals. Field-Marshal Lord Montgomery pointed out that morale was a matter of mental health, and that if we had to face grim times the spirit and mind of the nation were weapons which must be kept in good order. Sir Otto Niemeyer was able to report that the association had weathered the financial storm which blew up in 1948, when the Ministry of Health's grant of £2000 to local authorities was withdrawn.

International European Society of Hæmatology

A meeting is to be held in Rome in September. Further particulars of this society may be had from Dr. A. Piney, the secretary for Great Britain, 152, Harley Street, London, W.1.

Red Cross Unit for Korea

A British Red Cross unit has this month left for Korea, where its tasks will be to alleviate the plight of the homeless by organising the distribution of food and clothing, establishing camps, and planning a medical programme to ensure adequate water and sanitation; to try to prevent disease; and to treat sickness. The medical member of the team is Lieut.-Colonel M. C. L. Smith. Similar units are being sent by other national Red Cross societies.

French Medical Films

On Tuesday, Jan. 30, at 8.15 P.M., at the Institut Français du Royaume-Uni, 15, Queensberry Place, London, S.W.7, the following French films will be shown: Patent Ductus Arteriosus (Professor de Vernejoul, Marseilles), Functional Liberation of the Lungs (Dr. Warnery and Dr. Metras, Sanatorium du Petit-Arbois), Surgical Treatment of Portal Hypertensions (Professor Santy, Lyons), Glosso-pharyngo-laryngectomy (Professor Portmann, Paris), Psycho-surgery—Prefrontal Leucotomy (Professor Wertheimer and Professor Dechaume, Lyons). Cards of admission may be had from the intendant at the institute.

Dr. Chaloem Puranananda, secretary of the Thai medical research council and director of the Pasteur Institute at Bangkok, is spending three weeks in this country from Jan. 3 to 24, under the auspices of the British Council, visiting medical research institutions and studying recent British developments in electron microscopy.

Births, Marriages, and Deaths

BIRTHS

BIRT.—On Jan. 10, in London, the wife of Mr. St. John Birt, F.R.C.S.—a daughter.
BLEAKLEY.—On Jan. 9, at Bangor, co. Down, the wife of Dr. John Bleakley, M.B.E.—a daughter.
ESSEX-CATER.—On Jan. 6, at Bath, the wife of Dr. Antony Essex-Cater—a son.
HIGGINSON.—On Jan. 11, in London, the wife of Surgeon Lieut.-Commander J. C. Higginson, R.N.—a son.
MCCONNELL.—On Jan. 13, at Bristol, the wife of Dr. Brian McConnell—a son.
MCVICKER.—On Jan. 7, in London, the wife of Mr. R. A. M. McVicker, F.R.C.S.—a daughter.
REUBIN.—On Jan. 8, the wife of Dr. Isadore Reubin—a son.
ROBERTS.—On Jan. 3, in London, the wife of Mr. P. A. Lane Roberts, F.R.C.S.—a daughter.
RUTTER.—On Jan. 8, in Cardiff, the wife of Dr. F. W. E. Rutter—a daughter.
SIMPSON.—On Jan. 10, in London, the wife of Surgeon Lieut.-Commander R. W. Simpson, R.N.—a son.
VLASTO.—On Jan. 6, the wife of Dr. Philip Vlasto—a son.
WYMAN.—On Jan. 12, in London, the wife of Dr. A. L. Wyman—a son.

MARRIAGES

DIGGORY—MCCONNELL.—On Jan. 6, in London, Peter L. C. Diggory, M.B., to Patricia McConnell, M.C.S.P.
FLEMINGER—JACKSON.—On Jan. 8, in London, John J. Fleminger, M.B., to Ruth Jackson, M.B.

DEATHS

ARMSTRONG.—On Jan. 12, at Surbiton, Surrey, Pattison Armstrong, M.A., M.D. Dubl., D.P.H., aged 78.
AYMER.—On Jan. 9, at Stonehaven, Kincardineshire, Charles Aymer, M.B. Aberd.
CLARK.—On Jan. 9, at Dundee, John Macdonald Clark, M.B. St. And., D.A.
DEWAR.—On Jan. 10, at Burnham-on-Sea, Henry Steele Dewar, M.B. Edin., aged 34.
FRANKLIN.—On Jan. 7, in London, Philip Franklin, F.R.C.S.
IRWIN.—On Jan. 4, at Virginia Water, Surrey, John O'Malley Irwin, L.R.C.P.I., aged 75.
MASON.—On Jan. 10, at Cockermouth, Cumberland, Mary Emmeline Mason (née Joll), M.D. Lond.
READDIE.—On Jan. 9, Andrew Finlay Readdie, M.C., L.R.C.P.E., aged 61.
SINCLAIR.—On Jan. 4, at Torquay, Francis Howard Sinclair, M.D. R.U.I., aged 90.
SWAIN.—On Jan. 6, James Swain, C.B., C.B.E., M.D. Lond., F.R.C.S.
WALLACE.—On Jan. 6, at Filleigh, Chudleigh, Devon, Lewis Alexander Richard Wallace, B.M. Oxfd, aged 85.
WARE.—On Jan. 11, John Ware, B.A. Camb., M.D. Edin., aged 72.

Diary of the Week

JAN. 21 TO 27

Monday, 22nd

INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, S.E.5
5.30 P.M. Dr. E. Stengel: Lecture demonstration.
MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.1
8.30 P.M. Dr. Macdonald Critchley, Dr. R. Bodley Scott: Headache.

Tuesday, 23rd

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Prof. E. Adrian, O.M., P.R.S.: Physiology of Sleep.

Wednesday, 24th

HEBERDEN SOCIETY
4 P.M. (Westminster Hospital Medical School, Horseferry Road, S.W.1.) Demonstration of Cases. Dr. L. E. Glynn: Therapeutic Effects of Cortisone (Film).
ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vincent Street, Glasgow
5 P.M. Prof. L. S. P. Davidson: The Malabsorption Syndrome. (Finlayson lecture.)

Thursday, 25th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Dr. A. G. M. Weddell: Cutaneous Sensibility.
MEDICO-LEGAL SOCIETY, 26, Portland Place, W.1
8.15 P.M. Dr. Robert Forbes: The G.M.C. Hitherto and Henceforth.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Dr. H. C. Moore: Renal Cortical Necrosis.
UNIVERSITY OF ST. ANDREWS
5 P.M. (Materia Medica Department, Medical School, Dundee.) Prof. W. J. Tulloch: Influence of Adaptation on the Host-parasite Relationships in Disease.

Friday, 26th

UNIVERSITY OF LONDON
5.30 P.M. (London School of Hygiene.) Prof. A. W. Downie: Infection and Immunity in Smallpox.
ASSOCIATION OF CLINICAL PATHOLOGISTS
9.30 A.M. (Westminster Medical School, Horseferry Road, S.W.1.) Short communications.
4.45 P.M. Sir Lionel Whitby: Whither Clinical Pathology? (Presidential address.)
5.30 P.M. Sir Henry Cohen: Limitations of Laboratory Investigations.
MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, W.1
8 P.M. Dr. W. J. O'Donovan: Skin Conditions Simulating Those of Syphilis.

Saturday, 27th

ASSOCIATION OF CLINICAL PATHOLOGISTS
9.30 A.M. Short communications.
2.15 P.M. Dr. R. E. Holling, Dr. A. C. Dalziel, Dr. C. K. Simpson, Dr. F. E. Camps, Dr. R. Jarman: Manifestations of Anoxia.
BIOCHEMICAL SOCIETY
10.30 A.M. (Postgraduate Medical School, Ducane Road, W.12.) Short papers.
KENT PÆDIATRIC SOCIETY
2.30 P.M. (Farnborough Hospital, Farnborough, Kent.) Clinical Meeting.

Appointments

DOUGLAS, A. D. M., M.B. St. And., D.P.H., D.P.M.: consultant psychiatrist, Saxondale Hospital, Radcliffe-on-Trent, Notts.
GRAF, K. A., M.D. Vienna, D.P.M.: consultant child psychiatrist, Towers Hospital, Leicester.
HARRIES, E. J., M.D. Lond.: consultant pathologist, South Somerset clinical area.
LAL, KUNDAN, M.B. Punjab, D.M.R.T.: asst. radiotherapist, Liverpool Radium Institute.
MASON, T. A. B., L.R.C.P.E., D.M.R.: consultant radiologist, West Cornwall clinical area.
MORTON, T. C. St. C., C.B., O.B.E., M.D. Edin., F.R.C.P., D.P.H., D.P.M., D.T.M. & H.: area pathologist, West Cornwall clinical area.
REID, SYLVIA, M.B. Dubl., D.P.M.: consultant psychiatrist, Carlton Hayes Hospital, Narborough, Leics.
SMITH, A. W. H., M.R.C.S., D.P.M.: asst. psychiatrist, Rainhill Hospital, Lancs.
TERRY, R. B., M.D. Lond., M.R.C.P.: consultant physician, Seamen's group of hospitals.
TONKIN, R. D., M.D. Lond., M.R.C.P.: asst. physician, Westminster Hospital.
TOTTEN, J. W., M.B. Glasg., D.OBST.: appointed factory doctor, Dumbarton district, Dumbarton.

Hospital for Sick Children, Great Ormond Street, London:

CALNAN, C. D., M.A., M.B. Camb., M.R.C.P.: senior registrar, department of dermatology.
CARTER, F. S., M.D. Camb., M.R.C.P., D.C.H.: house-physician.
HAWORTH, J. C., M.B. Birm., D.C.H.: house-physician.
JONES, P. G. C., F.R.C.S., D.P.H.: house-surgeon.
MEARA, R. H., M.B. Camb., M.R.C.P.: senior registrar, department of dermatology.

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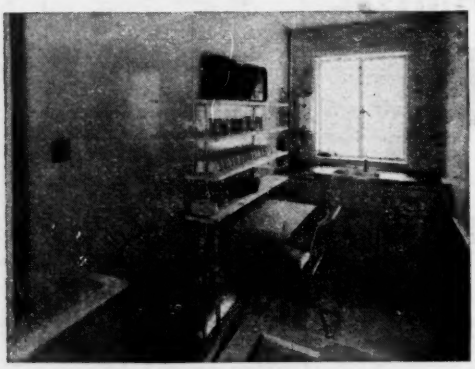

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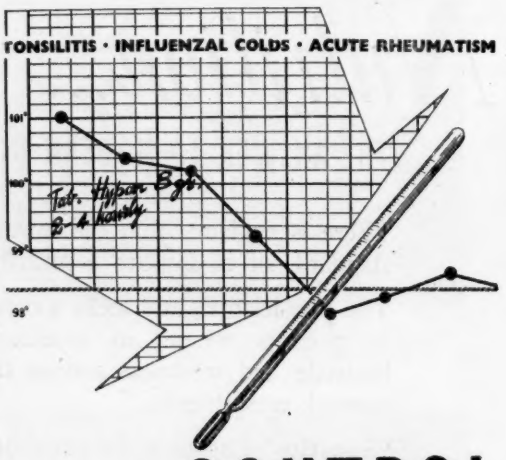

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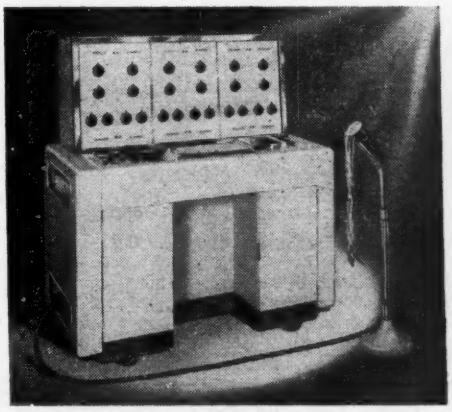

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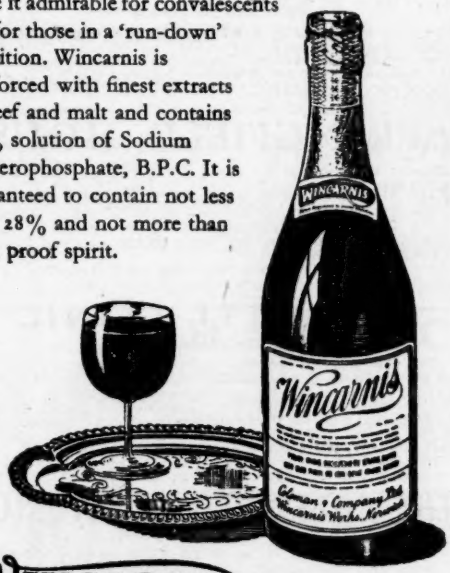

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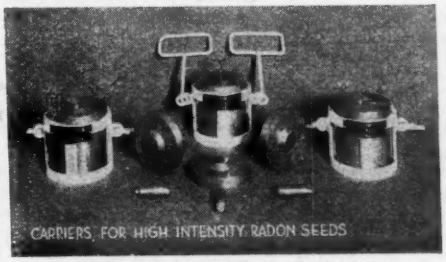

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General Managers:
G. F. LEWIS, R. G. THORNTON,
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Statement of Accounts, 31st December, 1950

LIABILITIES

	£
Current, Deposit and other Accounts	1,287,849,866
Acceptances, Guarantees, Indemnities, etc., for account of customers....	64,587,211
Paid-up Capital.....	15,858,217
Reserve Fund.....	13,750,000

ASSETS

Cash in hand and with the Bank of England	106,194,255
Balances with other British Banks and Cheques in course of collection..	51,319,901
Money at Call and Short Notice.....	88,047,000
Bills Discounted.....	315,585,740
Treasury Deposit Receipts.....	97,500,000
Investments	310,898,829
Advances to customers and other Accounts	325,967,491
Investments in Subsidiaries:—	
The British Linen Bank.....	3,727,658
Other Subsidiaries.....	8,554,670
Other Trade Investments.....	1,588,670
Bank Premises and Adjoining Properties	8,073,869
Customers' Liability for Acceptances, Guarantees, Indemnities, etc.....	64,587,211

HEAD OFFICE: 54 LOMBARD ST., LONDON, E.C.3

Telephone: HOLborn 1342

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CHEMICAL ANALYSES
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CHISWICK HOUSE

PINNER, MIDDLESEX
Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.
A modern country house, 12 miles from Marble Arch, in attractive secluded grounds. Fees from 10 guineas per week inclusive. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc.
Separate house in six acres of grounds nearby for convalescent patients. DOUGLAS MACAULAY, M.D., D.P.M.

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Green Lanes, Finsbury Park, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. **Insulin Coma Unit.** E.C.T. Group Psychotherapy. Trained Resident and Visiting Staff.
Telephone: STAmford Hill 7866/7 (2 lines).
Telegrams: "Subsidiary, London."
Medical Superintendent: ROBERT M. RIGGALL, Member, British Psycho-Analytical Society.

THE PSYCHONEUROSES & NEURASTHENIA

BOWDEN HOUSE
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(Incorporated Association not carried on for profit)

Private Nursing Home in pleasant surroundings, providing a high standard of individual care and treatment of nervous disorders in Men and Women.
All patients have separate rooms and begin with a Diagnostic week, when clinical, pathological and radiological investigations are made. Modern treatments available.

WYKE HOUSE, ISLEWORTH

MIDDLESEX (Tel. EALing 7000)

A Private Hospital for individual treatment of all forms of Nervous and Mental Illness, including Alcoholism and Drug Addiction. Uncertified and certified patients are admitted. This well-known Home for Men and Women has been reorganised, and all well-tried modern treatments are available.
Dr. H. PULLAR-STRECKER Dr G. W. SMITH, O.B.E.

SPRINGFIELD HOUSE

Phone: BEDFORD 3417 **Near BEDFORD**

For Mental Cases with or without Certificates

Fees from Seven Guineas per week (including Separate Bedrooms for all suitable cases without extra charge)

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.
INTERVIEWS IN LONDON BY APPOINTMENT

ROBUTTI CLINIC

ALASSIO, ITALIAN RIVIERA

Superbly situated Private Clinic for the care and treatment of physical and psychosomatic illness (including asthma and anxiety states); also for convalescence and high-protein diet. X-rays, physical therapy, &c. English and Italian speaking physicians and nurses. Medical Superintendent: Renzo Desaglio, M.D. Matron: Miss Rosina Robutti. Consulting Physicians: Carl Lambert, M.D., and Philip Strang, M.R.C.P.
Inquiries: Secretary, 3, Upper Brook Street, W.1.

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester, equipped for the treatment of Pulmonary Tuberculosis.

Terms from £9 15s. 6d. per week

Full particulars from SECRETARY, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.
Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres

In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach

There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON"

A PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL DISORDERS

Telephone: RODNEY 4242 (2 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Fifteen acres of grounds; own garden produce. Hard and grass tennis courts, putting greens. Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actinotherapy, prolonged immersion baths, shock and all modern forms of treatment. Chapel.

Senior Physician Dr. C. M. T. HASTINGS, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are reasonable, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON.

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive Grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the MEDICAL SUPERINTENDENT, The Old Manor, Salisbury

HAYDOCK LODGE

NEWTON-LE-WILLOWS, LANCASHIRE

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism, and Drug Addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens, in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *Telephone:* Ashton-in-Makerfield 7311. *Telegraphic Address:* Wootton, Ashton-in-Makerfield.

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

Nursing, dietetic, massage, x-ray and laboratory departments **Central heating and a lift to all floors**

Inclusive charges Apply SECRETARY Telephone: Ruthin 66

CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

The object of this Hospital is to provide the most efficient means for the treatment and care of patients of both sexes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by Trustees

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT Telephone: GATLEY 2231

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

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POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

For Prospectus and list of tutors apply to Dr. G. E. OATES, University Examination Postal Institution, 17, Red Lion-square, London, W.C.1 (Phone HOLborn 6313).

Academic and Educational

UNIVERSITY OF LONDON

A Lecture entitled "INFECTION AND IMMUNITY IN SMALLPOX" will be given by Prof. A. W. DOWNIE (Liverpool) at 5.30 P.M. on 26TH JANUARY at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

A REFRESHER COURSE will be held during the week beginning 12TH MARCH, 1951, at the 3 hospitals of the Institute:—

Queen Charlotte's Maternity Hospital,
Chelsea Hospital for Women,
Hammersmith Hospital, Department of Obstetrics and Gynæcology.

This course is specially arranged for general practitioners and deals with those aspects of obstetrics and gynæcology considered to be of use in their practice. Attendance at this course qualifies approved general practitioners for Ministry of Health grants.

As the number of places is limited, applications for enrolment should be sent as soon as possible to the Secretary of the Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, S.W.3.

UNIVERSITY OF LONDON

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

The ROUTINE PRACTICE of Queen Charlotte's Maternity Hospital is available to approved general practitioners for periods of 2 weeks at a time. Such attendance on the practice of the hospital qualifies for Ministry of Health grants.

Further details and application forms can be obtained from the Secretary of the Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, S.W.3.

INSTITUTE OF DISEASES OF THE CHEST

MEDICAL REFRESHER COURSE

A Refresher Course dealing chiefly with non-tuberculous diseases of the chest will be held at the London Chest Hospital from 9TH APRIL to 13TH APRIL, 1951, from 9.30 A.M. to 4.30 P.M. each day. Fee 4 guineas.

Applications should be addressed to the Sub-Dean, Institute of Diseases of the Chest, London Chest Hospital, London, E.2, before 1st March, 1951.

SHORT COURSES IN THORACIC SURGERY AND ANÆSTHESIA

Short part-time courses in Thoracic Surgery and Anæsthesia will be held in the Institute of Diseases of the Chest from 2ND APRIL to 14TH APRIL, 1951. The courses will consist of lectures and demonstrations from 5 P.M. to 7 P.M. each evening from Monday to Friday, together with surgical case demonstrations on the 2 Saturday mornings. The fees are 4 guineas for the surgical course, and 3 guineas for the anæsthetic course.

Further information can be obtained from the Surgical Sub-Dean, Institute of Diseases of the Chest, Fulham-road, London, S.W.3, and applications should be made before 1st March, 1951.

THE ROYAL SOCIETY OF MEDICINE

NICHOLS FELLOWSHIP

The Council of the Royal Society of Medicine invites applications for a grant of £225 p.a. in aid of research to be carried out to advance knowledge in obstetrics and gynæcology, which will be awarded on the recommendation of the Council of the Section of Obstetrics and Gynæcology of the Society.

The place at which the work is to be carried out and an outline of the proposed research must be stated in the application.

A preliminary report on the progress of the research must be submitted at the expiration of the first 6 months.

The Fellowship will be awarded in the first place for a period of 1 year and, at the discretion of the Council, may be extended for a second year.

Applications must be received by the Secretary, Royal Society of Medicine, 1, Wimpole-street, London, W.1, by 31st March, 1951, and candidates must state their position with regard to call-up for military service.

COURSE IN THERAPEUTICS

IN THE INSTITUTE OF ORTHOPÆDICS
15TH TO 24TH FEBRUARY, 1951

Thursday, 15th February, Great Portland-street

10.00 A.M.	Rest	Mr. H. J. BURROWS
11.15 A.M.	Posture	Dr. J. JOSEPH
12.45 P.M.	Lunch	
2.00 P.M.	Movement	Mr. H. J. BURROWS
3.00 P.M.	Principles of appliances	Mr. A. T. FRIPP
4.00 P.M.	Tea	

Friday, 16th February, Great Portland-street

10.00 A.M.	Postural exercises	Miss M. MACMURRAY
11.00 A.M.	Electrical treatment of muscle	Mr. H. J. SEDDON
12.45 P.M.	Lunch	
2.00 P.M.	Clinical demonstration	Mr. H. J. SEDDON
4.00 P.M.	Tea	

Saturday, 17th February, Great Portland-street

10.00 A.M.	Manipulation	Mr. H. J. BURROWS
11.15 A.M.	Demonstration of appliances	Mr. W. TUCK

Monday, 19th February, Country Branch, Stanmore

10.00 A.M.	Bed apparatus	Mr. F. J. HEDDEN
11.30 A.M.	Pool and slings	Miss L. M. PRIOR
12.45 P.M.	Lunch	
1.30 P.M.	Plaster of Paris	Miss DONLAN and Mr. CHOLMELY
2.45 P.M.	Workshops	Mr. W. TUCK
3.15 P.M.	Plastic splints	Dr. J. T. SCALES
4.00 P.M.	Tea	

Tuesday, 20th February, Country Branch, Stanmore

10.00 A.M.	Chemotherapy	Dr. C. H. LACK Dr. F. H. STEVENSON
11.30 A.M.	Cold abscesses and sinuses	Mr. F. J. HEDDEN
12.45 P.M.	Lunch	
1.45 P.M.	Clinical demonstration	Mr. F. J. HEDDEN
4.00 P.M.	Tea	

Wednesday, 21st February, Great Portland-street

10.00 A.M.	Arthrodesis	Mr. J. I. P. JAMES
11.30 A.M.	Arthrodesis	Mr. J. I. P. JAMES
12.45 P.M.	Lunch	
2.30 P.M.	Tendon and muscle transfer	Mr. D. M. BROOKS
4.00 P.M.	Tea	

Thursday, 22nd February, Great Portland-street

10.00 A.M.	Nerve repair	Mr. H. J. SEDDON
11.30 A.M.	Nerve repair	Mr. H. J. SEDDON
12.45 P.M.	Lunch	
2.00 P.M.	Tendon repair	Mr. J. I. P. JAMES

Friday, 23rd February, Great Portland-street

10.00 A.M.	Limb equalisation	Mr. J. I. P. JAMES
11.15 A.M.	Arthroplasty	Mr. K. I. NISSEN
12.45 P.M.	Lunch	
2.00 P.M.	Chronic osteomyelitis	
3.00 P.M.	The effect of hormones in the treatment of osteoporosis	Dr. J. R. NASSIM

Saturday, 24th February, Country Branch, Stanmore

10.00 A.M.	Ward round	Mr. K. I. NISSEN

The fee for the course (including lunch and tea) is 7 guineas.

Early application should be made to the Dean, 234, Great Portland-street, London, W.1.

POSTGRADUATE COURSE IN INDUSTRIAL OPHTHALMOLOGY

to be held at the
BIRMINGHAM AND MIDLAND EYE HOSPITAL
(in conjunction with the Department of Postgraduate Medical Studies, University of Birmingham)

26TH FEBRUARY–2ND MARCH, 1951

Morning session:
A clinical demonstration each morning at 9.30 A.M.
Lectures at 11.15 A.M.

26th Feb.	Intra-ocular Foreign Bodies	Mr. P. JAMESON EVANS (with film)
27th Feb.	Eye Protection in Industry	Mr. E. W. MURRAY
28th Feb.	The Pathological Aspect of Ocular Injuries	Dr. E. W. ASSINDER
1st Mar.	Assessment of Incapacity Arising from Ocular Hazards	Mr. H. CAMPBELL ORR
2nd Mar.	Miners' Nystagmus	Mrs. D. R. CAMPBELL

Afternoon session:
From 1.30 P.M., and will take the form of visits to works and factories.

Evening session:
Lectures at 6 P.M.

26th Feb.	Lighting and Occupational Visual Efficiency	Mr. H. C. WESTON
27th Feb.	Ophthalmological Problems Related to Precision Work	Mr. J. G. DRUMMOND CURRIE
28th Feb.	Modern Treatment of Burns of the Face	Mr. D. M. JACKSON
1st Mar.	Chemical Injuries of the Eye	Dr. A. LLOYD POTTER
2nd Mar.	Colour Vision in Industry	Prof. W. J. B. RIDDELL

The course is open to all qualified medical practitioners and full particulars of the course can be obtained from the Secretary, Research Department, Birmingham and Midland Eye Hospital, Church-street, Birmingham, 3. Applications to join the course should be made before 12th February.

THE UNIVERSITY OF LEEDS

Applications are invited for Imperial Chemical Industries, Limited, RESEARCH FELLOWSHIPS in Bacteriology, Biochemistry, Biomolecular Structure, Botany (Plant Biochemistry), Chemical Engineering, Chemistry, Chemistry of Leather Manufacture, Chemotherapy, Colour Chemistry and Dyeing, Engineering (Civil, Electrical or Mechanical), Fuel and Refractories, Geology (including Geochemistry), Metallurgy, Mining (Selective Flotation and Geophysical Surveying), Pharmacology, Physics, Physiology, Textile Industries (Protein Chemistry). Fellowships will be of an annual value within the range £600–£900 a year, according to qualifications and experience and will normally be tenable for 3 years.

Further particulars can be obtained on request. 3 copies of applications (1 in the case of applicants from overseas), together with the names of 2 referees, should reach the Registrar, The University, Leeds, 2, not later than 30th April, 1951.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3 months' course of Postgraduate Surgery is arranged to start on 26TH MARCH, 1951. It is suitable for surgeons requiring a refresher course in the current outlook on general surgery or for graduates preparing to specialise in surgery; approximately 275 hours of instruction are provided. A similar course will be held starting on 1st October, 1951. Fee £31 10s.

INTERNAL MEDICINE

A course lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begins on 2ND APRIL, 1951. These courses consist of 320 hours' instruction, comprising lectures, clinical demonstrations, and ward visits. A similar course begins on 1st October, 1951. Fee £31 10s.

Additional instruction in Clinical Pædiatrics is arranged in conjunction with the course in medicine, for which there is a small fee; the numbers are limited.

MEDICAL SCIENCES

A 3 months' course in Applied Anatomy, Physiology, Pathology, Bacteriology, and Biochemistry will begin on 2ND JULY, 1951. This course is suitable for postgraduates wishing to take the Primary Fellowship examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

Applications for enrolment to Director of Postgraduate Studies, Surgeons' Hall, Edinburgh, 8. Applicants for courses should supply particulars of qualifications and postgraduate experience.

ROYAL VETERINARY COLLEGE AND HOSPITAL (UNIVERSITY OF LONDON). Applications are invited for the appointment of a HEAD TECHNICIAN (Male) in the Department of Pathology. Appointee will also be required to undertake the duties of Supplies and Equipment Officer. The appointment will attract a personal salary ranging from £500–£600 p.a., with superannuation benefits and children's allowances. A flat would be available on certain conditions.

Applications, giving the names of 2 referees, should be forwarded to the Secretary, Royal Veterinary College and Hospital, Royal College-street, London, N.W.1.

THE GROCERS' COMPANY offer each year 1 Scholarship for the encouragement of original medical research in the causation, prevention, or treatment of disease. The award, which is tenable for 2 years from 1st September, is of £450 for the first year and £500 for the second year, in addition to which the Court will grant up to £50 a year towards the cost of special apparatus, &c., required by the scholar. Candidates must be British subjects and not more than 35 years of age.

Applications should be made on prescribed form to be obtained from the Clerk (together with a copy of the regulations), and submitted, before 1st June to the Clerk, Grocers' Hall, Princes-street, London, E.C.2.

BRITISH EMPIRE CANCER CAMPAIGN invites applications from British subjects for EXCHANGE FELLOWSHIPS IN CANCER RESEARCH offered by the National Cancer Institute of Canada and the American Cancer Society. Fellowships are awarded for periods of 1 year and the annual stipend will be $4000. Travelling expenses to centre of work will be borne by the Campaign.

For further particulars apply to the Secretary-General, 11, Grosvenor-crescent, London, S.W.1.

NATIONAL ASSOCIATION FOR MENTAL HEALTH. Applications are invited for the post of MEDICAL DIRECTOR at a salary of £1750 p.a., with increments. The appointment is a part-time one (7 sessions) having opportunities for outside clinical work. The successful candidate will be required to be a registered medical practitioner and a specialist in psychiatry. His duties will include administration and lecturing.

Applications, with names of 3 referees, should be addressed to the General Secretary, 39, Queen Anne-street, W.1, within 14 days of the appearance of this advertisement.

THE WELSH NATIONAL SCHOOL OF MEDICINE. UNIVERSITY OF WALES. Applications are invited for the appointment of CLINICAL PATHOLOGIST in the Department of Pathology. The work will consist of morbid anatomy and histology. There are good facilities for research. Salary at the rate of £1500, by annual increments of £100 to £2000. Superannuation and child allowance schemes apply to this appointment.

Applications to be made within 28 days of the appearance of this advertisement to the Secretary, 34, Newport-road, Cardiff, from whom further particulars may be obtained.

UNIVERSITY OF OXFORD. Department of Anatomy. Applications are invited for a vacancy in Neurological Research combined with part-time demonstrating in anatomy. Salary in accordance with age and experience.

In applying for further details, applicants should state their qualifications. W. E. LE GROS CLARK.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. OBSTETRIC UNIT. Applications are invited for the post of FIRST ASSISTANT in the Obstetric Unit. Salary according to qualifications but not less than £1250 p.a. with superannuation and family allowance. The appointment will commence from 1st April, 1951. Applicants must possess a university degree and the M.R.C.O.G. The holder of the post will be required to sign an honorary contract to undertake duties in University College Hospital.

Applications, with names of 2 referees, should be sent to the Secretary of University College Hospital Medical School, University-street, London, W.C.1, not later than 14 days from the date of the appearance of this advertisement.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for the post of SENIOR LECTURER IN MEDICINE. The duties will include assistance to the Professor of Medicine in teaching students for the medical degrees of the University of London, the care of patients in the University College Hospital and research in the Department of Medicine. The salary scale is £1200–£50–£1600 p.a., and the point of entry in the scale is determined by qualifications and experience. Child allowance is paid and also a temporary cost-of-living allowance. Superannuation is under F.S.S.U. arrangements. Unfurnished accommodation is available at a rent of 5% of basic salary. The successful applicant will be expected to take up the post during September, 1951.

Applications (12 copies), giving full particulars of qualifications, and the names of 3 referees, should be received before 12th February, 1951, by the Secretary, Senate Committee on Higher Education in the Colonies, Senate House, University of London, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for the post of SENIOR LECTURER IN CHEMICAL PATHOLOGY in the Department of Pathology. The duties of the post will include chemical pathological work in the University College Hospital and instruction in chemical pathology of students working for the medical degrees of the University of London. The salary scale is £1200–£50–£1600 p.a., and the point of entry in the scale is determined by qualifications and experience. Child allowance is paid and also a temporary cost-of-living allowance. Superannuation is under F.S.S.U. arrangements. Unfurnished accommodation is available at a rent of 5% of basic salary. The successful applicant will be expected to take up the post during June, 1951.

Applications (12 copies), giving full particulars of qualifications, and the names of 3 referees, should be received before 12th February, 1951, by the Secretary, Senate Committee on Higher Education in the Colonies, Senate House, University of London, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for appointment to the CHAIR OF SURGERY. The Professor will be Head of the Department of Surgery and will be responsible for the teaching of medical students for the degrees of the University of London and for the development of research. He will also be in charge of surgical beds in the University College Hospital. The duties should begin as soon after 1st July, 1951, as can be arranged. The salary will be at a fixed point in the range £2000–£2500 p.a. Superannuation is under F.S.S.U. arrangements, child allowances are paid and also a temporary cost-of-living allowance. Unfurnished accommodation is available at a rent of 5% of basic salary.

Applications (12 copies), giving qualifications, and the names of 4 referees, should be received before 12th February, 1951, by the Secretary, Senate Committee on Higher Education in the Colonies, Senate House, University of London, London, W.C.1, from whom further particulars can be obtained.

UNIVERSITY OF MALAYA. Applications are invited for the post of LECTURER AND CHIEF ASSISTANT in the Medical Units in the University. Salary £1260 p.a., plus expatriation allowance for overseas recruited staff of £231 p.a. Cost-of-living allowance £168–£420 p.a., according to personal circumstances. Temporary non-pensionable allowance of £210 p.a. payable in respect of medical qualifications. Free passages for appointee, wife, and children under 10 years of age. Part furnished quarters at rent not exceeding 10% of salary, or housing allowance in lieu. Provident fund scheme on 10% contributory basis.

Applications (6 copies), with names of 3 referees, and full details of qualifications, and experience, should be sent to the Secretary, Inter-University Council for Higher Education in the Colonies, 1, Gordon-square, London, W.C.1, from whom further particulars may be obtained. Closing date 17th February, 1951.

Hospital Services : Senior Appointments

HOSPITALS FOR DISEASES OF THE CHEST. The Board of Governors invite applications for the appointment of Part-time CONSULTANT THORACIC SURGEON to The London Chest Hospital, E.2. The duties require the equivalent of 4 notional half-days a week, including attendances at the Hospitals' Country Branch at Arlesey, near Letchworth. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of present and previous appointments, together with the names and addresses of 3 referees, should reach the undersigned by 17th February, 1951. Canvassing will disqualify, but applicants may visit the Hospitals. F. G. ROUVRAY, Secretary to the Board.

Brompton Hospital, S.W.3.

CHARING CROSS HOSPITAL GROUP. Applications are invited for the appointment of Part-time CONSULTANT SURGEON to the E.N.T. Department at Harrow Hospital. 3 sessions per week, as follows : 1 session each Monday (10 A.M. to 12 NOON), 1 session each Friday (10 A.M. to 12 NOON), and all day on alternate Tuesdays. The appointment is made in accordance with the terms and conditions of service laid down by the Ministry of health. It is subject to the National Health Service (Superannuation) Regulations, 1950.

Candidates, who must be Fellows of the Royal College of Surgeons of England, with experience in this specialty, should submit 12 copies of their application, stating age, qualifications, and experience, and the names of 3 referees, to reach the undersigned not later than first post on 21st February, 1951. Canvassing of members of the Board of Governors or Advisory Appointments Committee will disqualify.

GEORGE J. JONES,
House Governor and Secretary to the Board.
Charing Cross Hospital, Strand, W.C.2.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. HAREFIELD HOSPITAL, HAREFIELD, and COLINDALE HOSPITAL, The Hyde, N.W.9. Applications are invited for the appointment of THORACIC SURGEON at the above Hospitals for 2 to 3 half-days per week at each hospital to include duties in some associated general hospitals. Harefield Hospital has 444 Beds for the treatment of tuberculosis and there is a thoracic surgical unit (non-tuberculous) of 78 Beds. Colindale Hospital has 234 Beds for the treatment of tuberculosis. Candidates should possess a higher surgical qualification and have special experience in thoracic surgery. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 3rd February, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals by direct appointment with the Medical Directors.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. The Board of Governors invite applications for the part-time consultant appointment of ASSISTANT PÆDIATRICIAN at Queen Charlotte's Maternity Hospital. The successful candidate will be required to undertake duties for 2 sessions per week. The salary will be in accordance with the terms and conditions of service for hospital medical staff for the time being in operation.

Applications should be lodged with the undersigned not later than 28th February, 1951. Canvassing of members of the Board or the Advisory Appointments Committee will lead to disqualification.

R. S. H. THOMAS, Secretary to the Board of Governors.
339, Goldhawk-road, London W.6.

For appointment of Orthopædic and Traumatic Surgeon (Consultant) at Finchley Memorial Hospital, see St. Albans City Hospital advertisement in Provincial section.

Provincial

BARNET GENERAL HOSPITAL, Wellhouse-lane, Barnet, HERTS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of Whole-time ASSISTANT PHYSICIAN (Geriatrician) to be responsible for the care of the chronic sick at the above Hospital and annexes, amounting to approximately 120 Beds in addition to outpatients. Applicants should have special interest and experience in the care of the aged, and possession of a higher qualification in medicine is desirable. The terms and conditions of service for hospital medical and dental staffs will apply to the post, and salary will be on the scale of £1300–£1750 p.a.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Medical Superintendent of the Hospital.

BIRMINGHAM REGIONAL HOSPITAL BOARD AND WARWICKSHIRE COUNTY COUNCIL. Applications invited for joint appointment of Whole-time CONSULTANT CHEST PHYSICIAN, South Warwickshire Group of Hospitals and Warwickshire County Council. Applicants to possess higher medical qualification and wide experience in tuberculosis treatment. Successful applicant will devote 9/11ths time to Board at King Edward VII Sanatorium and clinical duties Leamington and Stratford, and 2/11ths time to work for Warwickshire County Council. Remuneration for local-authority work will be determined by agreement to be negotiated, otherwise appointment in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies) stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees to Secretary, 10, Augustus-road, Birmingham, 15, before 5th February. Canvassing will disqualify. Candidates may visit sanatoria concerned.

OXFORD REGIONAL HOSPITAL BOARD invite applications for the post of ASSISTANT SENIOR MEDICAL OFFICER. The candidate appointed will be required to assist the Senior Administrative Medical Officer in the planning, organisation, and staffing of the hospital and specialist services of the region, and to carry out such administrative and executive duties as may be assigned to him. Salary £1450–£50–£1650 subject to National Health Service (Superannuation) Regulations, 1950. Previous experience in medical administration essential and knowledge of mental health services desirable. Car necessary.

Applications, stating date of birth, full particulars of qualifications, and experience, and the names and addresses of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 29th January, 1951. Further particulars on application.

HITCHIN GROUP OF HOSPITALS AND ST. ALBANS CITY HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the part-time appointment of PHYSICIAN (Geriatrician) to organise and undertake the geriatric services at the above hospitals for 5 half-days per week. Applicants should possess a higher medical qualification and have special interest and experience in the care of the aged. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals by direct appointment with the Secretary, Luton and Hitchin Group Hospital Management Committee, Luton and Dunstable Hospital, Dunstable-road, Luton, Beds, for the Hitchin group, and to the Secretary, Mid Herts Group Hospital Management Committee, St. Albans City Hospital (Osterhills Unit), Normandy-road, St. Albans, Herts, for St. Albans City Hospital.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following appointments :—

(*a*) Consultant ANÆSTHETIST for duties mainly at hospitals with the No. 13 (Huddersfield) Hospital Management Committee group, together with additional duties at hospitals within the No. 12 (Storthes Hall) Hospital Management Committee group. The person appointed will be required to reside in or near Huddersfield.

(*b*) Consultant ANÆSTHETIST for duties mainly with the Genito-urinary Unit at the Bradford Royal Infirmary and additional duties as may be required in other hospitals in the No. 15 (Bradford A) and No. 16 (Bradford B) Hospital Management Committee groups. The person appointed will be required to reside in or near Bradford.

(*c*) Consultant ANÆSTHETIST for duties at hospitals within the No. 4 (Hull A), No. 5 (Hull B), and No. 6 (East Riding) Hospital Management Committee groups. The person appointed will be required to reside in or near Beverley.

Candidates for the appointments should have wide experience in anæsthetics and have held the D.A. for at least 4 years. The appointments will be part-time (9 half-days per week) and subject to the National Health Service (Superannuation) Regulations, 1950. The remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the undersigned not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

WM. A. SHEE, Secretary to the Board.
29/31, Eastgate, Leeds, 2.

LEEDS REGIONAL HOSPITAL BOARD invites applications from suitably qualified persons for the appointment of REGIONAL BLOOD TRANSFUSION OFFICER. The appointment is a whole-time one, of Consultant status, and will be subject to the terms and conditions of service of hospital medical and dental staffs. The provisions of the National Health Service (Superannuation) Regulations, 1950, are also applicable. In accordance with declared policy the Regional Blood Transfusion Service will have close associations with the University School of Medicine and the Board will not object to the successful candidate accepting, if offered, an honorary University appointment.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, by not later than 17th February, 1951. Canvassing in any form, either directly or indirectly, will disqualify.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the post of Whole-time PSYCHIATRIST (Senior Hospital Medical Officer grade) for duties at the following hospitals :—

(*a*) Menston Hospital, Menston, near Leeds. A small self-contained flat at the Hospital is available for a married person.

(*b*) Stanley Royd Hospital, Wakefield. Accommodation is available for a single person.

The appointments will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Part-time CONSULTANT in Orthopædic Surgery (9 sessions per week) for duties mainly at hospitals within the No. 15 (Bradford A) Hospital Management Committee group together with additional duties at hospitals within the No. 10 (Wakefield B) and No. 19 (Ilkley and Otley) Hospital Management Committee groups. The person appointed will be required to reside in or near Bradford. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Part-time CONSULTANT in Ophthalmology (6 sessions per week). The duties, which will include consultative work in connection with the School Eye Service, will be mainly in hospitals in the Leeds A group. The Outpatient Department is at the Public Dispensary and Hospital, Leeds, and facilities for inpatients will be provided at St. James's Hospital, Leeds. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a Whole-time ASSISTANT CLINICAL PATHOLOGIST (Consultant grade) for duties mainly at the Kingston General Hospital and the Western General Hospital, Hull, and additional duties as may be required at other hospitals in the Hull A and Hull B Hospital Management Committee groups. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the remuneration will be in accordance with the terms and conditions of service of hospital medical-and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from suitably qualified practitioners for the following whole-time, non-resident posts of ASSISTANT ANÆSTHETIST working under the direction of Consultants at the following hospital centres :—

(*a*) South Manchester (mainly at Withington Hospital, but with limited sessions at the Duchess of York Hospital).
(*b*) Wigan and Leigh Hospitals and Wrightington Hospital near Wigan.
(*c*) West Manchester Hospitals (Park Hospital, Davyhulme, and other hospitals in the group).

Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and posts superannuable. Applicants should possess the D.A. Applicants for more than 1 post should state their preference.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time post of RESIDENT ASSISTANT PHYSICIAN at Baguley Sanatorium, near Manchester. A detached house is available in the grounds of the Hospital, and the person appointed will be required to deputise for the Physician-Superintendent. Applicants must have had wide experience in the diagnosis and treatment of pulmonary tuberculosis and possess a higher medical qualification. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 30th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from suitably qualified practitioners for the whole-time, non-resident posts of ASSISTANT RADIOLOGIST at the following hospitals :—

(*a*) Lancaster Royal Infirmary, Queen Victoria Hospital, Morecambe, Lancaster Moor and the Royal Albert Hospitals, Lancaster.
(*b*) Stockport and Buxton Hospitals (Stockport Infirmary, Stepping Hill Hospital, Stockport, &c.).

Applicants should possess the D.M.R. (D). and have wide experience in radiology. The successful candidates will work under the general supervision of a consultant and will be required to live within a reasonable distance of the main hospitals. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. National terms and conditions of service applicable and the posts superannuable. Applicants for more than 1 post should state their preference.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of ASSISTANT PATHOLOGIST to the Ashton, Hyde, and Glossop group of hospitals. The person appointed will work under the general supervision of a Consultant. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. Candidates must have wide experience and training in hospital pathology. The post is superannuable and the National Health Service terms and conditions of service will apply.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of ASSISTANT RADIOTHERAPIST, Christie Hospital and Holt Radium Institute, Manchester. Salary £1300 (at age 32)–£50–£1750 ; starting-point according to age. Post superannuable and national terms and conditions of service applicable. Candidates must possess the D.M.R.(T) and have wide experience and training in radiotherapy. A higher qualification in medicine or surgery will be an additional advantage.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 1st February, 1951. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. DURHAM HOSPITAL MANAGEMENT COMMITTEE GROUP. (Main hospitals : Dryburn 300 Beds ; Durham County 120 Beds. Maternity Beds : Dryburn 24 ; Croxdale Lodge 22. Gynæcological Beds : Dryburn 26. Population served approximately 150,000.) OBSTETRICIAN GYNÆCOLOGIST (Consultant status). Whole-time or part-time for a minimum of 9 notional half-days per week. Salary according to terms and conditions of service of hospital medical staff. Appointment subject to National Health Service (Superannuation) Regulations, 1950.

Applications, together with names and addresses of 1–3 referees and/or 1–3 testimonials, should be sent to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days. Canvassing will disqualify, but candidates are free to visit the hospitals in the group by arrangement with the Hospital Management Committee Secretary, Dryburn Hospital, Durham.

ST. ALBANS CITY HOSPITAL, St. Albans, and FINCHLEY MEMORIAL HOSPITAL, Granville-road, North Finchley, N.12. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of Part-time ORTHOPÆDIC AND TRAUMATIC SURGEON for 6 half-days per week, to organise and supervise the orthopædic and traumatic work at the above hospitals. The St. Albans City Hospital consists of 3 contiguous hospitals administered as 1, with a total of some 350 Beds. Finchley Memorial Hospital is a general hospital of about 80 Beds. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with the names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, not later than 27th January, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals by direct appointment with the Secretaries of the hospitals.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications invited for post of SENIOR ASSISTANT MEDICAL OFFICER at the above Sanatoria. Candidates should be Members of a Royal College of Physicians and must have had experience in the treatment of pulmonary tuberculosis and in the aftercare of major chest surgical cases. Commencing salary £1300 p.a., rising by £50 annually to a maximum of £1750, less a deduction for any emoluments provided.

Applications, accompanied by the names of 2 referees, to be sent to the Medical Director, Tor-na-Dee, Milltimber, Aberdeenshire, before 31st January.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the whole-time appointment of ASSISTANT CHEST PHYSICIAN, Winchester Area. Candidates must possess a sound knowledge of chest diseases and pulmonary tuberculosis in particular. Duties will be allocated between the sanatoria and chest clinics in the group and under the administrative and clinical supervision of the Consultant Chest Physician. The appointment in respect of the duties at chest clinics will be a joint one between the Regional Board and the Hampshire County Council. Salary according to age and experience on the scale £1300–£50–£1750 p.a. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and in accordance with the agreed terms and conditions of hospital medical and dental staffs under the National Health Service.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 3rd February, 1951. Canvassing will disqualify, but applicants are not precluded from visiting the area.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the under-mentioned Consultant appointment(s) under the agreed National Health Service terms and conditions of service for hospital medical and dental staffs and subject to the National Health Service (Superannuation) Regulations, 1950.

(1) CONSULTANT E.N.T. SURGEON, St. Helier Group of Hospitals. Part-time, 6 half-days per week. Duties are mainly at St. Helier Hospital, Carshalton, but may include occasional work at other hospitals within the group.

(2) CONSULTANT E.N.T. SURGEON, Queen Mary's Hospital for Children, Carshalton. Part-time, 2 half-days per week.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1.) South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 3rd February, 1951. Applications will be considered from candidates wishing to apply for either or both of the appointments. Canvassing will disqualify, but applicants are not precluded from visiting the hospitals.

SHEFFIELD REGIONAL HOSPITAL BOARD invite applications from qualified medical practitioners for the following maximum part-time post :—

CONSULTANT E.N.T. SURGEON to the Chesterfield Royal Hospital and the United Sheffield Hospitals (Royal Infirmary Unit) as arranged with the Board of Governors of the United Sheffield Hospitals, with duties also at the Lodge Moor Isolation Hospital, Sheffield, and certain school clinics.

The salary and conditions of service will be in accordance with those agreed between the Ministry of Health and the profession. The post is subject to the National Health Service (Superannuation) Regulations, 1950.

Application forms and full details may be obtained from the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be received not later than 5th February, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals and clinics concerned by direct arrangement.

SHEFFIELD REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for the post of Whole-time CONSULTANT RADIOLOGIST with duties at the Doncaster Royal Infirmary ; the Victoria and Kilton Hospitals, Worksop ; Fullerton Hospital, Denaby Main ; the Retford and District Hospital, and the Rampton Hospital. The person appointed will be required to reside within 10 miles of the Doncaster Royal Infirmary. The salary and conditions of service will be in accordance with those agreed by the Ministry of Health and the profession. The post is subject to the National Health Service (Superannuation) Regulations, 1950.

Application forms and full details may be obtained from the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be received not later than 5th February, 1951. Canvassing will disqualify, but candidates are invited to visit the hospitals concerned by direct arrangement.

NEWFOUNDLAND. Applications are invited from Doctors with surgical experience holding F.R.C.S. for RELIEF SUPERINTENDENT, Cottage Hospitals, Newfoundland. Salary $ 6000 p.a., with travelling expenses. 2 years' contract.

For further particulars write—A. SHAW, Medical Agent, Premier Buildings, 88, Church-street, Liverpool, 1.

Hospital Services : Junior Appointments

BATTERSEA GENERAL HOSPITAL, Battersea Park, S.W.11. BATTERSEA AND PUTNEY GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SURGICAL OFFICER required. Post graded Junior Hospital Medical Officer. Salary within scale £700–£50–£1000 p.a.

Applications, with copies of 2 recent testimonials, to Administrative Officer.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Required, HOUSE OFFICER, post tenable for 6 months and commencing on 1st April, 1951, at the above Postgraduate Teaching Hospital, with which is associated The Institute of Psychiatry (University of London). The salary will be from £400–£450 a year. Deductions will be made for meals supplied and for residential amenities if provided.

Applications, giving details of experience, and the names of 2 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor, Maudsley Hospital, Denmark-hill, S.E.5.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Required, SENIOR HOUSE OFFICER. Appointment to commence on 1st April, 1951, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Applicants should intend to take a full training in psychiatry, and should have held a resident appointment in a general hospital. Experience in general medicine and neurology or in the basic sciences is an advantage. The salary will be £670 a year. Deductions will be made for meals supplied and for residential amenities if provided.

Applications, giving details of experience, and the names of 2 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor, Maudsley Hospital, Denmark-hill, S.E.5.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL. Required, REGISTRAR. Appointment to commence on 1st April, 1951, at the above Postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). Candidates with postgraduate experience in general medicine and neurology, or in psychology, will receive special consideration. The salary will be £775 a year, less a deduction of £120 a year for residential amenities if provided.

Applications, giving details of experience and the names of 2 referees, should be made within 1 week of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor, Maudsley Hospital, Denmark-hill, S.E.5.

CHARING CROSS HOSPITAL UNIT AT MOUNT VERNON HOSPITAL, NORTHWOOD, MIDDLESEX. Required, HOUSE PHYSICIAN (Second House Officer post) to the Children's Ward, who, in addition, may be required to undertake certain anæsthetic duties. The appointment is tenable for 6 months from 30th January, 1951. Salary in accordance with the terms and conditions of service laid down by the Ministry of Health, less deduction for board-residence.

Application forms, obtainable from the undersigned, should be completed and returned by first post on 25th January, 1951.

GEORGE J. JONES,
House Governor and Secretary to the Board.
Charing Cross Hospital, Strand, W.C.2.

CHARING CROSS HOSPITAL UNIT AT MOUNT VERNON HOSPITAL, NORTHWOOD, MIDDLESEX. Required, SURGICAL HOUSE OFFICER (First House Officer post). Tenable for 6 months from 1st February, 1951. Salary in accordance with the terms and conditions of service laid down by the Ministry of Health, less deduction for board-residence.

Application forms, obtainable from the undersigned, should be completed and returned by first post on 25th January, 1951.

GEORGE J. JONES,
House Governor and Secretary to the Board.
Charing Cross Hospital, Strand, W.C.2.

COLINDALE HOSPITAL, Colindale-avenue, The Hyde, N.W.9. RESIDENT JUNIOR HOUSE SURGEON (second or third post) required at the above Hospital to assist in thoracic, orthopædic, and genito-urinary surgery, post vacant middle January, 1951. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months' appointment, terminable by 1 month's notice.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials to the Physician-Superintendent, as soon as possible.

CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE.

Dulwich Hospital, East Dulwich-grove, S.E.22
St. Giles' Hospital, St. Giles'-road, Camberwell, S.E.5

Required, HOUSE OFFICERS (surgical duties). Salary £350–£450 a year, according to experience, with deduction at rate of £100 a year in respect of residence. Appointments tenable for 6 months in first instance.

Applications, stating age, qualifications, and experience, enclosing copy testimonials to the Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, S.E.22.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, CASUALTY OFFICER (resident), Male or Female. Salary £400 or £450 p.a., according to experience, plus £50 p.a. as a supplemental payment, post vacant 1st April, tenable for 6 months at the Main Outpatient Department, Camden Town, N.W.1.

Applications must be made on the prescribed form, with copies of 3 recent testimonials, to be returned by 2nd February.

K. A. F. MILES, House Governor.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, RESIDENT HOUSE SURGEON (Male or Female), for a period of 6 months. The successful candidate will be required to take up his duties on 18th March. Salary in accordance with the new national scale.

Applications on the prescribed form, with copies of 3 recent testimonials, to be returned by 2nd February.

K. A. F. MILES, House Governor.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th March, 1951, for 2 SURGICAL REGISTRARS (part-time) to attend in the Outpatient and Casualty Departments as follows :—

Monday morning (Outpatient Department, 1 session).
Tuesday morning (Outpatient Department, 1 session).
Tuesday afternoon (Casualty Department, 1 session).
Wednesday morning (Casualty Department, 1 session).
Thursday morning (Outpatient Department, 1 session).
Thursday morning (Casualty Department, 1 session).
Thursday afternoon (Casualty Department, 1 session).
Friday morning (Casualty Department, 1 session).
Saturday morning (Outpatient Department, 1 session).

The appointments are graded as Senior Registrarships within the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Further particulars and form of application, which must be returned not later than 12th February, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for 3 Whole-time ASSISTANT MEDICAL REGISTRARS on 1st April, 1951. The appointments are graded as Registrarships within the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Further particulars and form of application, which must be returned not later than 5th February, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. HOUSE OFFICER (first, second, or third post) to a General Surgeon with some duties in the E.N.T. Department, vacant 21st February, 1951. Salary, terms, and conditions of service as approved for hospital medical staff.

Applications, stating age, nationality, qualifications, with dates and details of experience, together with copies of 2 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13. Closing date 31st January, 1951.

KING EDWARD MEMORIAL HOSPITAL, Ealing. HOUSE OFFICER (second or third post) to Casualty and Fracture Departments. Salary, terms, and conditions as approved for hospital medical staff.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, as soon as possible.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. HOUSE PHYSICIAN (second or third post), vacant 1st March, 1951. Salary, terms, and conditions as approved for hospital medical staff.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, by 7th February, 1951.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.13. Locum Tenens RESIDENT SURGICAL OFFICER (grade Senior Registrar), vacant 1st February, 1951, for 3 months. Salary, terms, and conditions of service as approved for hospital medical staff. Applicants should have held house appointments and have had surgical experience, preference to those holding Diploma F.R.C.S.

Applications, stating age, nationality, qualifications, details of experience, with copies of 2 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, as soon as possible.

HACKNEY HOSPITAL, E.9. Required, Resident Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON. Post recognised for M.R.C.O.G. Vacancy occurs on 8th February, 1951. Preference will be given to applicants who have held resident surgical and medical posts in a General Hospital. The appointment will be for a period of 6 months. Salary will be in accordance with the National Health Service terms and conditions of service of hospital medical and dental staffs.

Applications, together with copies of testimonials, should be submitted not later than 29th January, 1951, to the Secretary, Hospital Management Committee, Hackney Group (No. 6), 230, Homerton High-street, E.9.

LONDON HOSPITAL, Whitechapel, E.1. Applications invited for post of REGISTRAR in general medicine. A higher qualification although desirable, is not essential. The appointment will be for 1 year, renewable for a further year at a salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications (12 copies), giving names and addresses of 3 referees, should be addressed to the House Governor (from whom further particulars may be obtained) by 10th February, 1951. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications invited for post of SENIOR REGISTRAR to the Bernhard Baron Institute of Pathology, vacant 1st March, 1951. The appointment will be for 1 year, renewable for a further year at a salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications (12 copies), giving names and addresses of 3 referees, should be addressed to the House Governor (from whom further particulars may be obtained), by 5th February, 1951. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications invited for post of REGISTRAR to the Venereal Diseases Department Laboratory, vacant on 1st April, 1951. Knowledge of serology desirable. Duties include work in the clinical laboratories of the hospital. The appointment will be for 1 year, renewable for a further year at a salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications (6 copies), giving names and addresses of 3 referees, should be addressed to the House Governor (from whom further particulars may be obtained) by 8th February, 1951. H. BRIERLEY, House Governor.

MILE END HOSPITAL, Bancroft-road, London, E.1. (455 Beds.) Required, HOUSE SURGEON (House Officer, first, second, or third post), post vacant immediately. Tenable for 6 months. Salary, &c., in accordance with national scale.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, London, W.9. HOUSE SURGEON (resident) to the Neurosurgical Department. Appointment for 6 months from the 1st March, 1951. Salary and conditions of service in accordance with National Health Service Act.

Applications, with copies of 3 recent testimonials, should be addressed to the Secretary by 5th February, 1951.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, London, W.9. Full-time SURGICAL REGISTRAR (non-resident) to the Neurosurgical Department. Appointment in the first instance for 12 months from 1st March, 1951, renewable. Grading as Senior Registrar. Terms and conditions of service in accordance with the National Health Service Act.

Applications, with copies of two recent testimonials, to be addressed to the Secretary by 5th February, 1951.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and Banstead Wood, Surrey. Required, RESIDENT MEDICAL OFFICER (graded Senior House Officer), Male or Female, at Hackney-road, E.2, post vacant 1st March, 1951. Candidates must have had experience in the treatment of sick children. The appointment will be for 1 year. Salary £670 p.a., subject to a charge of £100 p.a. for residential emoluments.

Application forms may be obtained from the undersigned and should be returned with not more than 3 testimonials not later than 29th January, 1951. CHARLES H. BESSELL, Secretary.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited from registered medical practitioners for appointment of SIXTH HOUSE SURGEON to the Orthopædic Department. The appointment will commence as soon as possible, and continue until 30th June, 1951. Salary and conditions of service in accordance with those laid down by the Ministry of Health for House Officers.

Application forms may be obtained from the House Governor at the above address, and should be returned as soon as possible.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited from registered medical practitioners (Men or Women) for appointment of RESIDENT MEDICAL OFFICER, vacant 1st March, 1951. Salary scale and conditions of service will be in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor and should be duly filled in and returned on or before 29th January, 1951.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited from registered Male practitioners for post of RESIDENT CASUALTY OFFICER. Applicants must not be more than 10 years qualified. The appointment is for 6 months, duties to commence 1st April, 1951. Salary and conditions of service in accordance with those laid down by the Ministry of Health for House Officers (second or subsequent post).

Application forms may be obtained from the House Governor, The Royal Free Hospital, Gray's Inn-road, to whom they should be returned not later than 29th January, 1951.

ROYAL FREE HOSPITAL, N.W. Branch. Applications invited immediately from medical practitioners of not more than 10 years' qualification, for post of Locum RESIDENT MEDICAL OFFICER at the above Hospital. Duties to commence on 1st February, 1951, or as soon as possible after that date, for a period of 6 months. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor, The Royal Free Hospital, Grays Inn-road, W.C.1.

ROYAL FREE HOSPITAL, Liverpool-road, N.1. Applications invited from registered medical practitioners (Men or Women) for appointment of RESIDENT MEDICAL OFFICER, post vacant 1st March, 1951. Salary scale and conditions of service will be in accordance with those laid down by the Ministry of Health for Junior Hospital Medical Officers.

Application forms may be obtained from the House Governor, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned on or before 29th January, 1951.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from duly registered medical men for post of Part-time SENIOR REGISTRAR to the Department of Physical Medicine. Candidates must have had previous experience in this specialty and must hold D.Phys.Med. Duties will include attendance once a week for 1 session. Present holder of post is a candidate. Terms and conditions of service of hospital medical and dental staffs (Senior Registrar) will apply.

Applications, on a form obtainable from the House Governor, with copies of 3 recent testimonials, should be sent to the House Governor by 29th January, 1951.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited for the post of RESIDENT SENIOR REGISTRAR PATHOLOGIST. Present holder of post is a candidate. Terms and conditions of service of hospital medical and dental staffs (Senior Registrar) will apply.

Applications, on a form obtainable from the House Governor, with copies of 3 recent testimonials, should be sent to the House Governor by 29th January, 1951.

ROYAL NORTHERN HOSPITAL, Holloway, London, N.7. NORTHERN GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of SECOND RESIDENT ANÆSTHETIST (Senior House Officer grade), vacant on the 19th February, 1951. Salary at rate of £670 p.a., less £130 p.a. for residential emoluments. The appointment is recognised for D.A. Examination.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 recent testimonials, should be sent not later than 27th January, 1951, to—
GILBERT G. PANTER, Secretary.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered Women medical practitioners for appointment of RESIDENT MEDICAL OFFICER at the Hospital's 50-Bed country branch, near Crawley, Sussex; the post becomes vacant on 1st February 1951. The post is of Senior House Officer (formerly Junior Registrar) status, and the appointment will be for a period of 1 year. Salary £670 p.a., less £150 p.a. for board, residence, &c.

For form of application apply to the Senior Administrative Assistant at the Hospital.

ST. ANDREW'S HOSPITAL, Bow, E.3. Required, Resident HOUSE PHYSICIAN, post vacant immediately. Post tenable for 6 months. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications should be forwarded to the Medical Superintendent, St. Andrew's Hospital, Bow, E.3.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications invited for a REGISTRAR in the Children's Department commencing 1st March, 1951. The appointment will be for 1 year in the first place, with eligibility for re-election, and the salary will be in accordance with the Ministry of Health's scale.

Applications, together with the names of 3 referees, should be submitted to the undersigned on or before the 31st January, 1951. C. C. CARUS-WILSON, Clerk to the Governors.

ST. OLAVE'S HOSPITAL, Lower-road, Rotherhithe, S.E.16. JUNIOR HOUSE SURGEON required as from 31st January, 1951. Appointment tenable for 6 months. Salary £350, less £100 for residential emoluments.

Applications should be made to Mr. R. A. V. LEWYS LLOYD, F.R.C.S., Surgeon-Superintendent, quoting reference L.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of GENERAL MEDICAL OUTPATIENT REGISTRAR (part-time). Preference will be given to candidates who are Members of the Royal College of Physicians, or hold a Doctorate in Medicine of a university in the British Empire. The successful candidate will normally be required to undertake 4 notional half-days weekly. The appointment is for a first period of 12 months and the grading of the post will be Registrar.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, together with the names and addresses of 3 referees, should reach the undersigned by 3rd February, 1951.
8th January, 1951. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of GENERAL SURGICAL OUTPATIENT REGISTRAR (part-time). Preference will be given to candidates who are Fellows of the Royal College of Surgeons of England. The successful candidate will normally be required to undertake 3 notional half-days weekly. The appointment is for a first period of 12 months and the grading of the post will be Registrar.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, together with the names and addresses of 3 referees, should reach the undersigned by 3rd February, 1951.

8th January, 1951. ALAN POWDITCH, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of FIRST ASSISTANT to the Radiotherapy Department in the grade of Registrar. Applicants should possess the Diploma in Medical Radiotherapy or similar qualification. The post is for 1 year in the first instance and the successful candidate will be required to take up his duties as soon as possible. The terms and conditions of service of hospital medical staff will apply.

Applications, together with the names of 2 referees, should be received by the undersigned not later than 25th January, 1951.

P. H. CONSTABLE, House Governor.

WEST LONDON HOSPITAL, Hammersmith, W.6. THE BOARD OF GOVERNORS, HAMMERSMITH, WEST LONDON, AND ST. MARK'S HOSPITALS, invite applications for full-time, non-resident, post of SENIOR REGISTRAR (Department of Medicine). Candidates must be members of one of the Royal Colleges of Physicians. Salary in accordance with the terms and conditions of service for hospital medical staff

Applications, stating age, medical school, qualifications, and experience with dates, together with names of 2 referees, to be forwarded to the undersigned by 31st January, 1951. Canvassing will disqualify. WM. MILTON, Secretary.

150, Ducane-road, London, W.12.

WEST LONDON HOSPITAL, Hammersmith, W.6. THE BOARD OF GOVERNORS, HAMMERSMITH, WEST LONDON, AND ST. MARK'S HOSPITALS, invite applications from registered medical practitioners for 2 Part-time REGISTRAR posts in the Psychological Department. Each post is for 3 sessions per week —Monday P.M., Wednesday P.M., and Friday A.M. ; Monday A.M. and P.M., and Wednesday A.M. Salary in accordance with the terms and conditions of service for hospital medical staff.

Applications, stating age, medical school, qualifications, and experience with dates, together with names of 2 referees, to be forwarded to the undersigned by 31st January, 1951. Canvassing will disqualify. WM. MILTON, Secretary.

150, Ducane-road, London, W.12.

Provincial

(see also p. 50)

AYLESBURY. TINDAL GENERAL HOSPITAL. (297 Beds.) HOUSE SURGEON (first or second post), vacant 15th February, 1951. This post offers good surgical experience and is recognised for the F.R.C.S.

Please apply, with 2 testimonials or names for reference, to the Administrative Officer.

AYLESBURY, BUCKS. TINDAL GENERAL HOSPITAL. RESIDENT SURGICAL OFFICER (Junior Registrar), Male. Salary £670 p.a., less a charge for residential emoluments. The Hospital consists of 282 Beds, of which 100 Beds are for general surgical cases. There are four other Resident Medical Officers. The post, which will be vacant at the end of February or early March, offers excellent general surgical experience and will be for 1 year in the first instance. It is eminently suitable for training in practical surgery and for the final Fellowship Examination.

Applications, with copies of 2 testimonials or names for reference, should be forwarded, stating date free to commence duties, to the Administrative Officer.

ARLESEY, BEDS. THREE COUNTIES HOSPITAL (MENTAL). Applications invited for post of JUNIOR ASSISTANT PSYCHIATRIST (resident or non-resident). Salary £700–£1000, according to experience and qualifications. Duration of appointment in first instance for 2 years but may be extended. The Hospital (1350 Beds) which carries out all forms of treatment and provides facilities for research work, is conveniently situated, enabling Medical Officers to attend D.P.M. and other courses in London. Some 900 patients are admitted yearly (85% voluntary). Outpatient clinics are held at the local general hospitals.

Application forms are available on request to the Medical Superintendent.

ALTRINCHAM GENERAL HOSPITAL, near Manchester. (130 Beds.) JUNIOR HOUSE OFFICER required to commence duties on or about 15th February, 1951. 6 months' appointment. Appropriate Ministry of Health salary scale according to experience, less £100 p.a. for emoluments. R practitioners within 3 months of qualification, or holding first posts, may apply.

Applications, stating age, qualifications, &c., should be addressed to Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ALTRINCHAM GENERAL HOSPITAL, near Manchester. (130 Beds.) SENIOR HOUSE OFFICER (resident) required to commence duties on or about 1st March, 1951. 12 months' appointment. Salary £670 p.a., less a deduction of £155 for residential emoluments. Post recognised for the F.R.C.S. qualification. This resident surgical appointment in a busy general hospital, staffed by Manchester Consultant Surgeons, offers excellent opportunities of practical surgical experience to suitably qualified candidates.

Applications, stating qualifications, previous hospital experience, age, nationality, names and addresses of 3 referees, should be forwarded to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

BARNET GENERAL HOSPITAL, Barnet, Herts. House SURGEON (first or subsequent posts), required for 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. in respect of residential emoluments. Conditions of service in accordance with National Health Service regulations.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, should be sent immediately to the Medical Director.

BARNET, HERTS. CLARE HALL HOSPITAL. Junior REGISTRAR (surgical) required for the Thoracic Unit. The Hospital has 536 Beds, including 50 for surgery which includes tuberculous and non-tuberculous thoracic conditions. Duties include those of a Resident Surgical Officer. Appointment subject to Ministry of Health terms and conditions of service.

Applications, stating age, qualifications, and experience, should be forwarded immediately to the Medical Director, Clare Hall Hospital, South Mimms, Barnet, Herts.

BATLEY. THE GENERAL HOSPITAL. (102 Beds.) Required, HOUSE OFFICER (Physician), post now vacant at the above General Hospital. Salary, &c., in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, with copies of 3 recent testimonials, should be addressed to the undersigned at 20, Oxford-road, Dewsbury.

GEO. W. BATCHELOR, Secretary, Dewsbury,
Batley and Mirfield Hospital Management Committee.

BATH. ST. MARTIN'S HOSPITAL. Required, House SURGEON. Salary and terms and conditions of service in accordance with those laid down by the Ministry of Health, plus an additional £50 p.a.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be received by the undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Required, 2 House PHYSICIANS. Salary and terms and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be received by undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BEDFORD GENERAL HOSPITAL. (426 Beds.) Resident HOUSE PHYSICIANS required for general medical duties 1 to be resident at the North Wing (vacant on the 18th February, 1951), and 1 at the South Wing (vacant on the 14th February, 1951). Salary within the range of £350–£450 p.a., less £100 p.a. for residential emoluments.

Applications, stating age, nationality, qualifications, previous appointments, and the names of 3 persons to whom reference may be made if desired, should be addressed to the Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (209 Beds.) GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). The appointment will be for a period of 6 months, of which the first 2 will be with the Burns Unit (Medical Research Council) and the remainder in general traumatic service. The Hospital treats 50,000 new patients each year. The post offers practical experience in the treatment of all types of injury and includes a course of instruction on accident surgery given by the Consultant staff. Salary in accordance with the national terms and conditions of hospital medical and dental staffs.

Detailed applications, accompanied by copies of recent testimonials, to be sent to the Administrator.

BIRMINGHAM. SORRENTO AND LORDSWOOD MATERNITY HOSPITALS. GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. OBSTETRIC HOUSE SURGEON (second or third post). 9 months' appointment—6 months at Sorrento followed by 3 months at Lordswood Maternity Hospital. Recognised for the D.Obst. R.C.O.G. Salary according to national scale.

Applications for the above appointment, which becomes vacant on 1st March, should be sent to the Obstetrician, Sorrento Maternity Hospital, Birmingham, 13, not later than 31st January, 1951.

BIRMINGHAM, 16. THE CHILDREN'S HOSPITAL. THE UNITED BIRMINGHAM HOSPITALS. Required, SURGICAL REGISTRAR (non-resident) in the grade of Junior Registrar or Registrar, post vacant 1st February, 1951. Applicants should have had general surgical experience, and preference will be given to Fellows of the Royal College of Surgeons (England). Residence in the Hospital will be required when the Resident Surgical Officer is absent. The appointment will be subject to the terms and conditions of service of hospital medical and dental staffs.

Forms of application may be obtained from the undersigned and should be returned immediately.

N. R. WINWOOD, House Governor.

Ladywood-road, Birmingham, 16.

BIRMINGHAM, 18. WINSON GREEN HOSPITAL. BIRMINGHAM (MENTAL A) GROUP NO. 5 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of SENIOR HOUSE OFFICER (Male or Female). Salary at rate of £670 p.a., less a charge of £120 p.a. for board and lodging if resident. The post, which will be for 1 year in the first instance, will be subject to the terms and conditions of service for medical and dental staffs and subject to the National Health Service superannuation regulations. The Hospital is associated with the University of Birmingham for the teaching of psychiatry, and training for the D.P.M. will be provided.

Applications, stating age, and qualifications, to be sent to the Medical Superintendent at the Hospital.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN. HOUSE SURGEON required. Salary £400 or £450 p.a., according to experience. The appointment is for a period of 6 months. Duties commence 1st April, 1951.

Application forms can be obtained from the undersigned, and should be returned not later than 3rd February, 1951.

BERNARD SYLVESTER, House Governor.
The United Birmingham Hospitals, Birmingham and Midland Hospital for Women, Showell Green-lane, Sparkhill, Birmingham,11.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for full residential emoluments.

Applications, stating age, qualifications, and experience, together with copies of not more than 3 testimonials, should be sent to the Secretary, The General Hospital, Bishop Auckland, co. Durham, as soon as possible.

BISHOP AUCKLAND. GENERAL HOSPITAL AND MATERNITY HOME. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON in Department of Obstetrics and Gynæcology. Salary £350 or £400 p.a., according to first or second post. Board-residence provided at Base Hospital (General) for which £100 p.a. deducted. The departmental beddage is 60, including 20 abnormal midwifery and 24 gynæcological. The present departmental staffing includes a second house officer.

Applications, stating age, nationality, qualifications, and any experience, together with 3 recent testimonials, should be sent to the Secretary, The General Hospital, Bishop Auckland, co. Durham, as soon as possible.

BLACKPOOL VICTORIA HOSPITAL. (Modern Hospital of 339 Beds.) Applications are invited from registered medical practitioners for the following posts :—

(1) HOUSE SURGEON, Surgical Unit, vacant 25th March. Post is recognised for F.R.C.S. examination.
(2) HOUSE SURGEON, Eye and E.N.T. Department, post recognised for D.O.M.S. and D.L.O. examinations.
(3) HOUSE OFFICER, Anæsthetic Department, post recognised for D.A. examination.

Salaries and conditions of service for all posts are in accordance with Ministry of Health recommendations—i.e., £350–£450 p.a., according to posts previously held, less £100 p.a. deduction in respect of full residential emoluments.

Applications, stating age, qualifications, and copies of 3 recent testimonials, should be sent to the Administrative Officer, Victoria Hospital, Blackpool.

9th January, 1951. WALTER R. SMITH, Secretary.

BOLTON. THE ROYAL INFIRMARY. (235 Beds— Junior Medical Establishment of 10.) Required, RESIDENT HOUSE SURGEONS (2) for general surgical duties, one post vacant immediately and the other on 12th February. Appointments will be for 6 months with salary £350, £400, or £450 p.a., according to experience. Other conditions of service in accordance with the terms issued by the Ministry of Health. A charge of £100 p.a. will be made for residence.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 persons to whom reference may be made, to be sent to the undersigned at the Royal Infirmary, Bolton, as soon as possible.

H. P. TRAVIS, Secretary,
Bolton and District Hospital Management Committee.

BOLTON. THE HULTON HOSPITAL. (130 Beds.) Required, RESIDENT MEDICAL OFFICER, post vacant 1st March and tenable for 12 months. Duties principally in connection with infectious diseases and dermatology cases, and some relief duties with tuberculosis cases. Previous pædiatric experience is desirable. Salary £670 p.a., with conditions of service in accordance with the terms issued by the Ministry of Health. An appropriate charge will be made for residence.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 persons to whom reference may be made, to be sent to the undersigned at the Royal Infirmary, Bolton, as soon as possible.

H. P. TRAVIS, Secretary,
Bolton and District Hospital Management Committee.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, to the Orthopædic Department, post vacant 26th January, 1951. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of the above Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post vacant 15th February, 1951. Salary in accordance with National Health Service scale—£350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, to the Assistant Secretary of the above Hospital, together with copies of 3 recent testimonials.

BRADFORD ROYAL INFIRMARY. House Surgeon (Thoracic Unit) required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. Orthopædic and ACCIDENT HOUSE SURGEON required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, along with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. Senior House SURGEON for general and urological surgery. Salary £400–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. House Surgeon (orthopædic and accident) required. Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, along with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road. BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Salary at the rate of £350, £400, or £450 p.a., according to experience, less £100 for residential emoluments. Duties to commence from 9th February, for a period of 6 months.

Applications, giving age, nationality, qualifications, and experience, together with copies of recent testimonials, to be sent to the Administrative Officer immediately.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (302 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for the above Hospital, vacant early February, 1951. Salary £350–£450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer at the Hospital, as soon as possible.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. Applications invited for appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in Venereology (non-resident). The successful candidate will be attached to Frenchay Hospital and in addition will be required to undertake duties in the various Bristol area clinics. Previous experience in venereology an advantage. The appointment will be subject to the National Health Service superannuation regulations and terms and conditions for hospital medical staff. Salary scale £700–£50–£1000.

Applications, with full particulars of age, qualifications, and experience, and the names and addresses of 3 referees, should reach the Secretary, Frenchay Hospital, Bristol, not later than 31st January, 1951.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. COSSHAM MEMORIAL HOSPITAL. (101 Beds—General and Casualty.)

HOUSE PHYSICIAN (first post) required 1st March, 1951.
HOUSE SURGEON AND CASUALTY OFFICER (first post) required 1st March, 1951.

National salary scale and conditions.

Applications, with full particulars, should be sent to the Group Secretary, Frenchay Hospital, Bristol.

BRISTOL. HAM GREEN HOSPITAL AND SANATORIUM. Required, JUNIOR HOUSE OFFICER. Salary £350–£450 p.a., less £100 for residential emoluments. This 600-Bed Hospital contains 200 Beds devoted to the treatment of pulmonary tuberculosis. Chest surgery is in use and the rest of the Hospital admits all types of infectious diseases from a wide area and research study is encouraged. Appointment tenable for 6 months but is renewable at the discretion of the Hospital Management Committee.

Applications to the Resident Physician, Ham Green Hospital, Pill, near Bristol.

BRISTOL MENTAL HOSPITAL. Applications invited for posts of JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry (resident or non-resident). Salary and conditions according to National Health Service scale—£700–£50–£1000. These posts will offer wide scope in psychiatry and its special branches, and holders will have every opportunity of studying and gaining experience for the D.P.M.

Applications, with copies of 2 recent testimonials, and the name of 1 referee, should be sent as soon as possible to the Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol, from whom further details may be obtained.

BURNLEY GENERAL HOSPITAL. (656 Beds.) Senior E.N.T. HOUSE SURGEON. The post is now vacant and tenable for 1 year. Salary £670 p.a., and conditions of service in accordance with the National Health Service terms.

Applications, with copies of 3 testimonials, should be sent forthwith to— J. E. WHEATCROFT, Secretary, Burnley and District Hospital Management Committee, General Hospital, Casterton-avenue, Burnley.

BURTON-ON-TRENT. GENERAL INFIRMARY. (Acute General Hospital—235 Beds.) Required, HOUSE PHYSICIAN (resident). Salary range £350–£450 in accordance with Ministry of Health terms.

Applications, with all details and copies of testimonials, to be forwarded immediately to—

J. E. SMITH, Secretary,
Burton-on-Trent Hospital Management Committee.

BURY GENERAL HOSPITAL. (164 Beds.) Required, HOUSE SURGEON. Post recognised for the F.R.C.S. Hospital is mainly surgical and experience can be gained in orthopædic and E.N.T. work. Salary and conditions of service in accordance with national scale.

Applications, giving full details of qualifications and experience, should be made immediately to—

H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Florence Nightingale Hospital, Bury (120 Beds for Infectious Diseases)

Aitken Sanatorium, Holcombe, near Bury (70 Beds for Tubercle)

A vacancy exists for a HOUSE PHYSICIAN to work between these Hospitals. Applicants should have held previous House Officer posts. Salary and conditions of service will be in accordance with those laid down for hospital medical and dental staffs.

Applications should be made immediately to—

H. WILKINSON, Secretary to the Committee.

Bury General Hospital, Walmersley-road, Bury, Lancs.

CARDIFF. THE UNITED CARDIFF HOSPITALS. The Board of Governors invites applications for the appointment of HOUSE SURGEON to the Ophthalmic Department at the Cardiff Royal Infirmary for a period of 6 months. Salary in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, nationality, qualifications, experience, and present appointment, together with the names of 2 referees, should be sent as soon as possible to—

ARNOLD TUNSTALL, Secretary and Principal Administrative Officer, The United Cardiff Hospitals.

Cardiff Royal Infirmary, Newport-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. The Board of Governors invites applications for the appointment of SENIOR HOUSE OFFICER (medical) at Llandough Hospital. Salary in accordance with terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, nationality, qualifications, experience, and present appointment, together with the names of 2 referees, should be sent as soon as possible to—

ARNOLD TUNSTALL, Secretary and Principal Administrative Officer, The United Cardiff Hospitals.

Cardiff Royal Infirmary, Newport-road, Cardiff.

CARDIFF. CITY ISOLATION HOSPITAL. (219 Beds.) HOUSE OFFICER (medical) required at the above Hospital. Salary £350, £400, or £450 a year, according to experience, less emoluments valued £100. The post is resident and tenable for 6 months.

Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cardiff.

CARDIFF. ROYAL HAMADRYAD GENERAL AND SEAMEN'S HOSPITAL. (66 Beds.) HOUSE SURGEON required at the above Hospital. Salary £350, £400, or £450 a year, according to experience, less emoluments valued £100. The post is resident and tenable for 6 months.

Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cardiff.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, ORTHOPÆDIC HOUSE SURGEON. Appointment now vacant and limited to 6 months. Previous experience in orthopædic surgery an advantage. Post is recognised for the F.R.C.S. Diploma. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, giving age, full particulars of qualifications with dates, and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. Applications invited from registered medical practitioners, Male and Female, for appointment of HOUSE SURGEON to the Orthopædic and Fracture Department at Addenbrooke's Hospital, vacant 14th February, 1951. Salary (resident) £400 or £450 a year, according to experience. An R practitioner who has already held 2 posts may apply, subject to the permission of the Central Medical War Committee.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned on or before Wednesday, 31st January, 1951. J. A. BEARDSALL, Secretary.

COLCHESTER, ESSEX. ESSEX COUNTY HOSPITAL. (192 Beds.) COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, CASUALTY OFFICER AND HOUSE SURGEON (first, second, or third post), to E.N.T. Department. Tenable for 6 months. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

COTTINGHAM, E. YORKS. CASTLE HILL HOSPITAL. (200 Beds—modern I.D. hospital with full laboratory facilities.) Whole-time HOUSE OFFICER (second or third post) required for duties under Consultant in I.D.

Detailed applications, with names of 3 referees, to be received by the Secretary, No. 5 Hospital Management Committee, Hull B Group, Castle Hill, Cottingham, E. Yorks, by 5th February, 1951.

COVENTRY GROUP NO. 20 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for under-mentioned posts. National scale of salaries :—

Coventry and Warwickshire Hospital (346 Beds)

HOUSE SURGEON, General Surgical duties, post now vacant.

SENIOR HOUSE SURGEON (Junior Registrar grade) for Casualty and Orthopædic Department, post now vacant.

Manor Hospital, Nuneaton (137 Beds)

HOUSE SURGEON for Casualty Department and general duties.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

CHELTENHAM. SUNNYSIDE MATERNITY HOSPITAL. Required, RESIDENT OBSTETRIC OFFICER. The Hospital, which is recognised for the purpose of training for the D.Obst.R.C.O.G., has 63 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. Appointment is for a period of 6 months and the salary will be £400 or £450 p.a., less £100 in respect of residential emoluments.

Applications, stating age, qualifications, and experience, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) Required, HOUSE OFFICER for the Casualty Department. Salary and conditions of service as laid down by Ministry of Health. This post carries special additional allowance of £50 p.a.

Apply to undersigned, from whom further particulars are obtainable. M. H. BOONE, Secretary,

Chesterfield Hospital Management Committee.

Royal Hospital, Chesterfield.

CHESTERFIELD ROYAL HOSPITAL. (327 Beds.) HOUSE PHYSICIAN required 1st March for 6 months' appointment. Salary in accordance with Ministry of Health rates.

Applications, with details of age, qualifications, and experience, and copies of 3 testimonials, to be submitted immediately to—

M. H. BOONE, Secretary,

Chesterfield Hospital Management Committee.

Royal Hospital, Chesterfield.

CHELMSFORD AND ESSEX HOSPITAL. 2 House SURGEONS required, 1 to commence immediately and 1 beginning of February. Salary according to National Health Service scale.

Apply, Secretary, Hospital Management Committee, Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX AND ST. JOHN'S HOSPITALS. HOUSE SURGEON required to work at above Hospitals. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

DARLINGTON MEMORIAL HOSPITAL. Required, RESIDENT ANÆSTHETIST (Male or Female). National Health Service superannuation regulations in force. Previous experience in anæsthesia an advantage, but not essential (trainee post).

Apply, with references and full details, forthwith to—

G. W. BECKWITH, Secretary,

Darlington District Hospital Management Committee.

DARLINGTON MEMORIAL HOSPITAL. Applications invited from Male or Female practitioners with experience, for post of CASUALTY OFFICER (Junior Hospital Medical Officer), resident. Salary £700–£50–£1000 p.a. The post is tenable for 12 months and is renewable annually.

Apply, with references, stating age and experience, to—

G. W. BECKWITH, Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Derby AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (general surgery), post vacant 19th February, 1951. 6 months' appointment. Recognised for F.R.C.S. National terms and conditions for House Officers apply.

Applications, with copies of 2 testimonials, should be sent as early as possible to the Secretary, Derbyshire Royal Infirmary, Derby.

DEWSBURY, BATLEY AND MIRFIELD HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER in the specialty of pædiatrics. The Staincliffe General Hospital, Dewsbury, is recognised for the D.C.H. Post is resident and subject to 1 month's notice on either side. Duties to be carried out at hospitals in the Group. Salary according to national scale.

Applications, stating age, qualifications, and nationality, with names of 2 referees, should be forwarded to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DEWSBURY. THE GENERAL HOSPITAL. House OFFICER (surgical), third or subsequent appointment, to assist Consultant Ophthalmic Surgeon. Terms and conditions of service as laid down for hospital medical and dental staffs (England and Wales).

Applications, giving full particulars and names of 3 referees, to undersigned at 20, Oxford-road, Dewsbury.

G. W. BATCHELOR, Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. WESTERN HOSPITAL. Required, HOUSE SURGEON (Male or Female) in the grade of Senior House Officer, post will become vacant on 4th March, 1951. Salary at the rate of £670 p.a., from which a deduction, at the rate of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality and present post, and accompanied by copies of 3 recent testimonials, should be forwarded by 16th February, 1951, to—

ARTHUR JONES, Secretary to the Committee.

c/o Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. Applications invited from registered medical practitioners for the whole-time post of CASUALTY OFFICER at above Hospital in accordance with the terms and conditions of service for hospital medical and dental staffs. Salary at rate of £670 p.a., from which a deduction at rate of £130 p.a. will be made for residential emoluments.

Applications, stating age, education, qualifications, and details of present and previous appointments with dates, and giving names and addresses of 3 referees, should be forwarded to the undersigned immediately.

ARTHUR JONES, Secretary,

Doncaster Hospital Management Committee.

c/o Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds—recognised under the Regulations for the Examinations of the R.C.S.) Required, HOUSE SURGEON (Male or Female). Salary £350, £400, or £450 p.a., according to experience. A deduction at rate of £100 p.a. made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded immediately to—

ARTHUR JONES, Secretary,
Doncaster Hospital Management Committee.
c/o Doncaster Royal Infirmary.

DORCHESTER. WEST DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Required, SENIOR PATHOLOGICAL REGISTRAR at the County Laboratory, Dorchester, which is the central Laboratory of the area, serving all the hospitals concerned. It was erected in 1938, and is comprehensively equipped. The appointment, which will normally be held for 3 years, will be made in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in operation; salary scale at the present time being at rate of £1000 p.a. for the first year, £1100 p.a. for the second year, and £1200 p.a. for the third year. Appointment subject to the provisions of the National Health Service superannuation regulations, and the successful candidate, if not already a transferable officer, will be required to pass a medical examination.

Intending applicants should apply to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, for application forms which should be returned, duly completed, within 14 days of the appearance of this advertisement. Canvassing, directly or indirectly, will disqualify, but candidates may visit the Laboratory by appointment with the Secretary.

DORCHESTER. DORSET COUNTY HOSPITAL. (125 Beds.) HOUSE SURGEON (Male or Female) required, post now vacant. Appropriate Ministry of Health salary according to experience, with a deduction of £100 p.a. for residence. Post tenable for 6 months.

Applications, stating age, experience, qualifications, and nationality, together with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road Dorchester, immediately.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments :—

The Guest Hospital, Dudley (154 Beds)
CASUALTY OFFICER, post now vacant.
HOUSE PHYSICIAN, post now vacant.
Corbett Hospital, Stourbridge (106 Beds)
CASUALTY OFFICER, post now vacant.
RESIDENT HOUSE SURGEON, post vacant 1st March, 1951.
RESIDENT HOUSE PHYSICIAN, post vacant 14th February, 1951.
Wordsley Hospital (440 Beds)
RESIDENT HOUSE SURGEON, post vacant 1st February, 1951.

Applications, stating age, experience, with copies of 3 recent testimonials, to—

H. RAYMOND HURST,
Secretary to the Management Committee.
The Guest Hospital, Dudley.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, 2 RESIDENT HOUSE SURGEONS, posts vacant 11th February and 9th March, 1951. 6 months' appointment. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 27th January, 1951. Candidates selected for interview will be notified by 3rd February, 1951.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT HOUSE PHYSICIAN, post vacant 1st March, 1951. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months' appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 27th January, 1951. Candidates selected for interview will be notified by 3rd February, 1951.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. (515 Beds.) ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE PHYSICIAN (second or third post) required 19th March, 1951, for general medical duties. 6 months' appointment. Salary and conditions as prescribed by the Ministry of Health. R practitioners holding first posts may apply.

Applications, stating age, nationality, qualifications, and experience, with names of 2 referees, to the Medical Director of the Hospital by 20th February, 1951. Canvassing disqualifies.

FARNBOROUGH HOSPITAL, Kent. Applications invited from registered medical practitioners, including R practitioners within 3 months of qualification, for appointment of HOUSE OFFICER for E.N.T. duties. The appointment is for a period of 6 months and is recognised for the D.L.O. Salary £350–£450 a year, according to experience, less £100 for residential emoluments.

Applications, stating age, qualifications with dates, and experience, accompanied by the names and addresses of 3 referees, should be forwarded to the Administrative Officer, Farnborough Hospital, Farnborough, Kent.

FARNHAM HOSPITAL, Hale-road, Farnham, Surrey. SENIOR SURGICAL OFFICER for duties in wards and casualty. Appointment for 1 year. Salary £670 p.a.

Applications by letter, stating age, qualifications, experience, and present appointment, with 1–3 recent testimonials (copies), to the Medical Superintendent of the Hospital.

EDINBURGH CENTRAL HOSPITALS. Resident Medical Officers required for the following hospitals :—

Chalmers Hospital, Edinburgh
HOUSE PHYSICIAN. HOUSE SURGEON.
Royal Hospital for Sick Children, Edinburgh
3 HOUSE PHYSICIANS (second or third posts).
2 HOUSE SURGEONS (second or third posts).
HOUSE SURGEON (E.N.T.), second or third post.
Princess Margaret Rose Hospital for Crippled Children, Edinburgh
2 HOUSE SURGEONS (second or third posts), 1 commencing 1st May, 1951.

Salary at £350–£400–£450 p.a., according to experience. The appointments will be for 6 months, commencing 1st April, 1951, except where otherwise stated.

Applications from registered medical practitioners, stating age, qualifications, experience, and the appointment desired, with the names of 2 referees, to be sent immediately to the Medical Superintendent, Edinburgh Central Hospitals, 1A, Rillbank-terrace, Edinburgh, 9.

FALMOUTH AND DISTRICT HOSPITAL. (61 Beds—2 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post vacant 1st April. Salary and conditions of service in accordance with Ministry of Health regulations.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, Falmouth and District Hospital, Cornwall.

FALMOUTH AND DISTRICT HOSPITAL. (61 Beds—2 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post vacant 21st February, in an extremely active general hospital doing major surgery and with both Outpatient and Casualty Departments. Salary and conditions of service in accordance with Ministry of Health regulations.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of 2 recent testimonials, should be sent to the Administrative Assistant, Falmouth and District Hospital, Cornwall.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL. (120 Beds.) NORWICH, LOWESTOFT AND GREAT YARMOUTH (GROUP 6) HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications to Secretary, Great Yarmouth and Gorleston General Hospital, Dene Side, Great Yarmouth.

GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from Officers with experience in Anæsthetics for the post of Locum ANÆSTHETIST. The appointment is for 1 month (February, 1951). Salary will be in the scale £700–£1000.

Apply, with the names of 2 persons for reference, to the Secretary, Grimsby Hospitals Management Committee, 13, Queen's-parade, Grimsby.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Required, MEDICAL SENIOR HOUSE OFFICER (resident). The appointment, which is vacant now, is tenable for 1 year and subject to National Health Service terms and conditions. Salary £670 p.a., less a deduction for residence.

Apply, immediately, to the Administrative Officer, Grimsby General Hospital, Grimsby.

GRIMSBY. SCARTHO ROAD INFIRMARY. (218 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). The person appointed will have, under the charge of Visiting Consultants, care of 34 acute surgical beds, to attend: 5 operating sessions weekly and 2 outpatient sessions weekly and share in the routine ward duties.

Applications to Administrative Officer, Scartho Road Infirmary, Grimsby.

GUILDFORD. ST. LUKE'S HOSPITAL. Guildford GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER, Gynæcological Unit (30 Beds), at the above Hospital. Post vacant 1st March, 1951, is tenable for 6 months, and recognised for M.R.C.O.G. Salary and conditions in accordance with National Health Service scale and terms of appointment.

Applications, giving full details of qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded as soon as possible to the Physician-Superintendent, St. Luke's Hospital.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, HOUSE SURGEON at the Sutton Branch Hospital, vacant February. Recognised for F.R.C.S. Salary £350–£450 p.a., according to the number of posts held. Appointment will be for 6 months, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, 2 CASUALTY OFFICERS (1 vacant now, 1 vacant February). Salary £350–£450, according to the number of posts held. Appointment will be for 6 months, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. Required, OPHTHALMIC HOUSE SURGEON for duties at the Hull Royal Infirmary and the Victoria Hospital for Sick Children, vacant February. Recognised for D.O.M.S. Salary £350–£450 p.a., according to the number of posts held. Appointment will be for 6 months, terminable by 1 month's notice either side.

Forms of application from the Administrative Officer, Hull Royal Infirmary.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required in the E.N.T. Department at the Hull Royal Infirmary and the Victoria Hospital for Sick Children. Recognised for D.L.O. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice on either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. ORTHOPÆDIC HOUSE SURGEON required, vacant now. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE SURGEON required to commence duties on 27th January, 1951. Salary in accordance with terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed as soon as possible to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE PHYSICIAN required to commence duty 22nd February, 1951. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications, together with copies of 3 recent testimonials, should be addressed to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HOUSE SURGEON required to commence duties on 22nd February, 1951. Salary in accordance with terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed as soon as possible to—

H. J. JOHNSON, Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HALIFAX GENERAL HOSPITAL. Required, Pædiatric HOUSE PHYSICIAN (Male or Female). Salary according to experience.

Applications, enclosing 3 recent testimonials, to be forwarded to the Secretary at the Royal Halifax Infirmary.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Required, HOUSE SURGEON (Male or Female). Salary according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be addressed to the Secretary at the Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Resident ANÆSTHETIST. Hospital providing large surgical turnover. Facilities available for practical experience under guidance of Consultant staff. Ample opportunities for studying for D.A.

Applications, stating age, sex, qualifications, and experience, with copies of 3 recent testimonials, to the Secretary, Halifax Area Hospitals Management Committee, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Required, HOUSE SURGEON (Male) to the Ophthalmic and E.N.T. Departments at this busy acute General Hospital. The post includes part-time casualty duty and is recognised for the D.O. and is vacant early January.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be forwarded to the Secretary.

HERTFORD COUNTY HOSPITAL, Hertford, Herts. (171 Beds.) Required, HOUSE SURGEON (Male), first or second post held. Duties to commence 16th February, 1951. 6 months' appointment. Salary at rate of £350–£400 p.a., less £100 p.a. for residential emoluments. R practitioner holding first post may apply.

Applications to the Secretary, Mr. P. G. BROOKS, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. (170 Beds.) WEST HERTS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (second or third post), vacant 14th February, 1951. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, and giving full details of qualifications and previous experience, and accompanied by copies of 2 recent testimonials, should be submitted to the Administrator at the Hospital as soon as possible.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER (Anæsthetist), second or third post, required in the Department of Anæsthesia. Hospital recognised for purpose of D.A. qualification. Resident or non-resident. Salary, terms, and conditions of service as approved for hospital medical staff.

Applications (endorsed "House Officer, Anæsthetist, W.M.H."), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to the Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13, closing date 30th January, 1951.

ISLE OF MAN. NOBLE'S HOSPITAL. Applications invited for post of HOUSE SURGEON (first post) in busy hospital with over 150 Beds and the usual ancillary departments. Post will provide ample and varied experience in pleasant surroundings. Salary £400 p.a., less £100 p.a. for board and lodging. Appointment for 6 months in first instance.

Applications, with copies of 2 recent testimonials, to the Secretary, Noble's Hospital, Douglas.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (160 Beds.) Applications invited for following appointments :—

RESIDENT SURGICAL OFFICER (Male). 6 months' appointment. Salary £450 p.a., less £100 p.a. for residential emoluments.

HOUSE SURGEON (Male or Female). 6 months' appointment. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for residential emoluments.

Applications in writing, stating age, qualifications with dates, and nationality, with copies of 3 testimonials, to be sent immediately, addressed to the undersigned at Pembroke County War Memorial Hospital, Haverfordwest.

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.

ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for the Royal Isle of Wight County Hospital, Ryde (but may be required to serve at any Hospital within the Group). Post recognised for F.R.C.S. Vacant immediately. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

IPSWICH BOROUGH GENERAL HOSPITAL.

RESIDENT ANÆSTHETIST HOUSE OFFICER required immediately. Post recognised for D.A.

HOUSE SURGEON to General Surgeon required immediately. National salary scale.

Applications, with full particulars, to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Ipswich.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. (124 Beds.) MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post vacant 24th January, 1951. Salary £350, £400, or £450 p.a., according to experience, less £100 for residential emoluments. Practitioners within 3 months of qualification may apply, when appointment limited to 6 months.

Applications, with copies of recent testimonials, to be sent to the Administrative Officer at the above Hospital.

KING'S LYNN. WEST NORFOLK AND KING'S LYNN HOSPITAL. (145 Beds.) RESIDENT SURGICAL OFFICER (Junior) at the above Hospital. Appointment for 1 year, renewable for second year. Salary £775–£890 p.a. The terms and conditions of service of hospital medical and dental staffs will apply.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should be sent to the undersigned not later than 5th February, 1951. Candidates are invited to visit the Hospital by direct arrangement with the Hospital Management Committee Secretary at the West Norfolk and King's Lynn Hospital.

K. V. F. MORTON, Secretary,
East Anglian Regional Hospital Board.
117, Chesterton-road, Cambridge.

LANCASTER. ROYAL ALBERT HOSPITAL. The ROYAL ALBERT HOSPITAL MANAGEMENT COMMITTEE invite applications for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Resident Medical Officer) at the Royal Albert Hospital for Mental Deficiency. Salary £700–£50–£1000 p.a. The post will be limited to 3 years' duration in the first instance. Appointment subject to provisions of National Health Service superannuation regulations and will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications should be forwarded to the Medical Superintendent not later than Thursday, 25th January, 1951.

LEAMINGTON SPA. WARNEFORD GENERAL HOS-PITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). CASUALTY OFFICER. There are 2 Casualty Officers sharing the duties of the Casualty Department and acting as House Surgeon to Specialist beds. The present vacancy is for an officer to look after E.N.T., dermatology, and V.D. clinics and beds. Post suitable for candidates from the Services and those wishing to gain experience to enter general practice. Tenure of post 6 months. Salary, &c., in accordance with number of posts previously held and the terms and conditions of service of hospital medical and dental staffs.

Apply immediately to Miss V. WELLS, Assistant Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOS-PITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14).

CASUALTY OFFICER. There are 2 Casualty Officers sharing the duties of the Casualty Department and acting as House Surgeon to Specialist beds. The present vacancy is for an officer to look after ophthalmic, orthopædic, and physical medicine clinics and beds. Post suitable for candidates from the Services and those wishing to gain experience to enter general practice. Appointment to commence 22nd January, 1951. Tenure of post 6 months. Salary, &c., in accordance with the number of posts previously held and the terms and conditions of service of hospital medical staff.

Applications should be made as soon as possible to Miss V. WELLS, Assistant Secretary.

Warneford General Hospital.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Required, HOUSE SURGEON at the above Hospital. 6 months' appointment. Salary at the rate of £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded to the undersigned, together with copies of 3 recent testimonials.

R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Required, HOUSE OFFICER for Orthopædic and Fracture Department at the above Hospital. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded to the undersigned, together with copies of 3 recent testimonials.

R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LINCOLN. THE LAWN HOSPITAL for Mental Diseases. (100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER. Salary and terms of service as issued by the Ministry of Health. Commencing salary £700 p.a., rising to £1000 p.a. There is a flatlet available. The appointment is subject to the provisions of the National Health Service (Superannuation) Regulations, 1950.

Applications, with names of 3 referees, should be forwarded as soon as possible to the Medical Superintendent, The Lawn Hospital, Lincoln.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the post of MEDICAL REGISTRAR to the Board for duties with the Bradford A Hospital Management Committee group. The appointment will be subject to the National Health Service (Superannuation) Regulations, 1950, and the salary will be in accordance with the terms and conditions of service of hospital medical and dental staffs.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 3rd February, 1951. Canvassing in any form will disqualify.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the post of ASSISTANT MEDICAL OFFICER (Junior Hospital Medical Officer grade) for duties at the Regional Blood Transfusion Centre, Leeds. The successful candidate will have ample opportunities to acquire a thorough knowledge of the whole range of blood-transfusion work. The appointment will be normally for 3 years and the commencing salary will be at the rate of £700 p.a. The provisions of the National Health Service (Superannuation) Regulations, 1950, and the terms and conditions of service of hospital medical and dental staffs will also apply.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, 29/31, Eastgate, Leeds, 2, not later than 17th February, 1951. Canvassing in any form will disqualify.

LEEDS, 9. ST. JAMES'S HOSPITAL. Required, Deputy RESIDENT MEDICAL OFFICER (Junior Registrar) at the above Hospital. Appointment for a period of 1 year in the first instance, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Forms of application, available from the undersigned, should be completed and returned not later than 2nd February, 1951.

J. FOLKARD, Secretary,
Leeds A Group Hospital Management Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Applications invited from registered medical practitioners (Male) for the appointment of RESIDENT AURAL OFFICER. Candidates must have held house appointments and have had some experience in E.N.T. work. The post is graded as for a Senior House Officer or a Junior Hospital Medical Officer according to qualifications and experience. There will be the possibility of advancement in due course to a training post for suitable candidates.

Applications, stating age, nationality, qualifications, and experience, together with the names of not more than 3 referees, should be sent to the undersigned not later than 10 days after the appearance of this advertisement.

S. CLAYTON FRYERS, Secretary to the Board of Governors.

LIVERPOOL. SOUTH LIVERPOOL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the under-mentioned appointments which will become vacant on 1st April, 1951.

Liverpool Chest Hospital 68/70, Mount Pleasant, Liverpool, 3 (78 Beds)
RESIDENT HOUSE PHYSICIAN.
JUNIOR HOUSE PHYSICIAN (resident or non-resident).
Liverpool Homœopathic Hospital, 42, Hope-street, Liverpool, 3 (54 Beds)
RESIDENT HOUSE PHYSICIAN.
Liverpool Heart Hospital, 34, Oxford-street, Liverpool, 7 (46 Beds)
RESIDENT HOUSE PHYSICIAN (Male). There is a unique opportunity afforded for acquiring specialist knowledge of diseases of the heart.

The appointments are for 6 months and the terms and conditions of service will be in accordance with the regulations of the Ministry of Health.

Applications on forms to be obtained from the undersigned, to whom they should be returned to be received not later than 12th February, 1951.

GARNET CHAPLIN, Secretary to the Committee.
Sefton General Hospital, Liverpool, 15.

LIVERPOOL. FAZAKERLEY HOSPITAL. Liverpool AND DISTRICT FAZAKERLEY GROUP HOSPITALS. Required, RESIDENT HOUSE PHYSICIAN at this Hospital, which is a teaching centre for infectious diseases in the University of Liverpool. Salary £350–£450 p.a., according to experience, less £100 p.a. for board-residence.

Applications to be submitted within 2 weeks of this advertisement to Physician-Superintendent, Fazakerley Hospital, Liverpool, 9.

LOUTH, LINCS. COUNTY INFIRMARY. (240 Beds.) Required, RESIDENT SURGICAL OFFICER at the above Hospital. Salary and conditions according to the national scale —i.e., £700 p.a.–£50–£1000 p.a.

Applications, giving full details of age, qualifications, and previous experience, together with the names of 2 referees, to be addressed to the Administrative Officer, County Infirmary, Louth.

LOUTH, LINCS. COUNTY INFIRMARY. (240 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (medical), post now vacant, at this busy general Hospital. Terms and conditions of service as laid down nationally.

Applications, giving names of 2 referees, to be addressed to the Administrative Officer, County Infirmary, Louth.

LOUTH, LINCS. COUNTY INFIRMARY. (240 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (anæsthetics and general duties), post now vacant at this busy General Hospital. The above duties cover gynæcology, maternity, E.N.T., and some orthopædics. Terms and conditions of service as laid down nationally.

Applications, giving names of 2 referees, to be addressed to the Administrative Officer, County Infirmary, Louth.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) Required, HOUSE SURGEON (Male or Female). Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, nationality, with 3 recent testimonials, to the Secretary, Lowestoft and North Suffolk Hospital, Lowestoft.

LYMINGTON AND DISTRICT HOSPITAL, Lymington, HANTS. HOUSE SURGEON required, post vacant 31st January. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

MACCLESFIELD, CHESHIRE. PARKSIDE HOSPITAL. (1552 Beds.) Applications invited for post of SENIOR HOUSE PHYSICIAN (psychiatric) from Doctors who have held 2 previous hospital appointments. Salary £450 p.a. A charge of £100 p.a. will be made for board, residence, and laundry. 6 months' appointment, renewable for a further period of 6 months. Post created with a view to providing psychiatric experience for intending general practitioners, or as introduction for applicant who may later wish to continue in this branch of medicine.

Applications as soon as possible to Medical Superintendent, stating age, nationality, and qualifications, with names of 2 referees.

MANCHESTER, 4. ANCOATS HOSPITAL. Applications are invited for the posts of :—
HOUSE SURGEON to the Orthopædic and Fracture Department.
HOUSE SURGEON to the E.N.T. Department.
Vacancies exist as from 1st February, 1951.

Applications, stating age, experience, and names and addresses of 2 referees, to be addressed to the undersigned (Dept. T.L.) as soon as possible.

JOHN H. DAFFORNE,
General Superintendent and Secretary.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL. (495 Beds.) Required, JUNIOR REGISTRAR. Appointment tenable for 1 year. Salary £670 p.a., less £155 p.a. for full residential emoluments. The post is medical and includes outpatient and ward duties.

Applications, with usual particulars, including nationality, should be sent as soon as possible to the Secretary, Manchester Babies' and Children's Hospital Management Committee, Booth Hall Hospital, Charlestown-road, Blackley, Manchester, 9.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of SENIOR REGISTRAR in the Manchester Chest Diseases Team with duties at the Manchester Chest Clinic, Oxford-road, and at the Thoracic Surgery Units, Baguley Hospital and Park Hospital, Davyhulme. Salary £1000–£100–£1300. National terms and conditions of service applicable and the post is superannuable. The appointment will be made in the first instance for a period of 1 year, but is subject to renewal for a period of 3 years at the discretion of the Board.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, together with the names and addresses of 3 referees, to be received not later than 25th January, 1951. Canvassing will disqualify.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (General Hospital—105 Beds.) Required, SENIOR HOUSE OFFICER (surgical), post vacant towards the end of February, to act as Deputy Resident Surgical Officer. The appointment is in accordance with the terms and conditions of service of hospital medical and dental staffs, and subject also to National Health Service (Superannuation) Regulations, 1950.

Applications, stating age, qualifications and dates, particulars of previous appointments with dates, along with names and addresses of 2 referees, to be sent to the undersigned as soon as possible.

T. SAMPSON, Secretary,
North Manchester Hospital Management Committee.
Crumpsall Hospital, Manchester, 8.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITAL, near MANSFIELD, NOTTS. (340 Beds.) Required, RESIDENT HOUSE SURGEON (second or subsequent post). Salary in accordance with National Health Service scale.

Applications, stating age, qualifications, experience, and enclosing copies of 2 recent testimonials, to be sent to Secretary.

MARGATE. THE GENERAL HOSPITAL. (132 Beds.) ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Appointment for a period of 6 months. Salary at rate of £350 p.a., less £100 for residential emoluments. R practitioners within 3 months of qualification may apply.

Applications, stating age, and qualifications, together with copies of 3 recent testimonials should be sent as soon as possible to the Administrator, The General Hospital, Margate.

MARKET DRAYTON. CHESHIRE JOINT SANATORIUM, near MARKET DRAYTON, SALOP. (305 Beds.) Required, HOUSE OFFICER (T.B.). Salary within the National Health Service scale, according to experience—i.e., £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, and full details of previous service, including national service, should be addressed to the Medical Superintendent at the Sanatorium, and forwarded without delay. THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

NEATH GENERAL HOSPITAL, Penrhiowtyn, Neath. (408 Beds.) Applications invited from registered medical practitioners for the post of HOUSE PHYSICIAN (obstetrics and gynæcology) at this Hospital which is recognised for the D.A., D.C.H., and D.Obst. R.C.O.G. Appointment of 6 months' duration. Salary at rate of £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and giving the names of 2 referees, should be addressed to the Secretary, Mid Glamorgan Hospital Management Committee, 8, Wind-street, Neath, as soon as possible.

NEWMARKET. WHITE LODGE HOSPITAL. Applications invited for the following appointments :—

HOUSE PHYSICIAN, post vacant 12th March, 1951.
HOUSE PHYSICIAN, post vacant 20th March, 1951.

Duties include care of general medical and tuberculosis patients, with some anæsthetic work under the supervision of the Specialist in Anæsthetics. Posts are resident and available for 6 months. Salaries in accordance with the national scale.

Applications, with copies of 3 recent testimonials, should be made to the Medical Superintendent.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN to the Professorial Psychiatric Unit. The Unit is under the clinical direction of the Department of Psychological Medicine, King's College, Medical School, University of Durham. The appointment is tenable for 6 months and becomes vacant on the 1st February, 1951. Practitioners who have held a previous house appointment in general medicine or surgery may apply. Salary according to terms and conditions of service issued by the Ministry of Health.

Applications, together with 1 copy of 2 testimonials, should be sent as soon as possible to the Medical Superintendent, Newcastle General Hospital, 418, Westgate-road, Newcastle upon Tyne, 4.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. Regional Chest Surgery Centre (160 Beds); Shotley Bridge Hospital and associated sanatoria. ANÆSTHETIST (Senior Registrar status), whole-time. Salary and conditions of service will be in accordance with the regulations and the appointment will be subject to review after 1 year. The great bulk of the work in the main centre—i.e., excluding the sanatoria—is concerned with non-tuberculous conditions (mediastinal, œsophageal, cardiovascular as well as pulmonary). Candidates must possess a D.A., have had considerable experience with anæsthesia, and preferably have had a sound preliminary general medical and/or physiological training. Appointee must be prepared to take an active part in clinical and physiological investigations, preoperative and postoperative management of patients in addition to undertaking the customary duties of an anæsthetist. The allocation of these duties may have to be varied from time to time according to clinical requirements by arrangement with the Senior Anæsthetist, but usually the work will be divided between the Centre and the sanatoria. Appointment subject to National Health Service (Superannuation) Regulations, 1950.

Applications, giving details of qualifications, and experience, together with copies of 1–3 testimonials, and/or the names and addresses of 1–3 referees, should be sent to the Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days. Canvassing of members of the Advisory Appointments Committee will disqualify, but candidates are entitled to visit the hospitals by arrangement with the Senior Surgeon, Regional Chest Surgery Centre, Shotley Bridge Hospital.

NEWCASTLE UPON TYNE. WALKER GATE HOSPITAL. Applications invited for post of SENIOR HOUSE OFFICER, Chest Department. The appointee will carry out duties at the above Hospital assigned to him under the supervision of the Senior Chest Physician. A training scheme for Registrar Chest Physicians is in existence in the Region. Salary and conditions as defined under terms and conditions of service of hospital medical and dental staffs (England and Wales) paragraph 4, on the scale appropriate to Junior Registrars at £670 p.a. Duties to commence 1st February, 1951.

Applications, with 3 testimonials, to be sent to the Secretary, Newcastle upon Tyne Hospital Management Committee, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, as soon as possible.

NOTTINGHAM GENERAL HOSPITAL. Required, SENIOR HOUSE OFFICER (medical) for the above Hospital. Duties to commence as soon as possible. Salary £670 p.a., and conditions of service in accordance with the published conditions of the Ministry of Health.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—
HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (Male), duties to commence as soon as possible. Applicants should be interested in urology. Salary and conditions of service in accordance with the published conditions of the National Health Service. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent as soon as possible to—
HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, JUNIOR CASUALTY OFFICER (first post), Male or Female, for the above Hospital. Duties to commence as soon as possible. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, and nationality, together with copies of testimonials, to be sent to—
HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, CASUALTY OFFICER. Duties to commence on 23rd January, 1951. Salary £350–£450 p.a., according to experience, less £100 emoluments. If held by a practitioner who is liable under the National Service Acts, the appointment will be for 6 months, otherwise renewable. Terms and conditions of service as laid down by Ministry Regulations.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—
HENRY M. STANLEY,
Nottingham No. 1 Hospital Management Committee.
General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (first post), Male or Female, for the above Hospital, duties to commence as soon as possible. Salary and conditions of service in accordance with the published conditions of the Ministry of Health, less £100 p.a. for emoluments. If held by an R practitioner the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—
HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. NOTTINGHAM NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Required, SENIOR HOUSE OFFICER to undertake work at the above Infirmary. Also HOUSE SURGEON. Salary and conditions of service for these posts are in accordance with the published conditions of the Ministry of Health. The post of House Surgeon is recognised for the D.O.M.S. Examination. Both posts are vacant on 1st March.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent as soon as possible to HENRY M. STANLEY, Secretary, General Hospital, Nottingham. (Nottingham No. 1 Hospital Management Committee.)

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL AND THE RADIUM INSTITUTE. Required, HOUSE SURGEON for General Surgery, post vacant 11th February, 1951. This appointment is recognised for the final F.R.C.S. by the Royal College of Surgeons.

Applications, accompanied by testimonials, to be forwarded immediately to the Secretary and House Governor.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL AND THE RADIUM INSTITUTE. Required, HOUSE SURGEON to E.N.T. and Radiotherapy Departments, post vacant 1st February, 1951.

Applications, accompanied by testimonials, to be forwarded immediately to the Secretary and House Governor.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for post of REGISTRAR in Anæsthetics to the hospitals of the Banbury and District Hospital Management Committee and to the Wingfield-Morris Orthopædic Hospital. The post will be for 1 year in the first instance and eligible for extension for a second year. The successful candidate will be required to reside in or near Banbury.

Applications, on a form obtainable from the Secretary, Joint Committee for Registrars, 43, Banbury-road, Oxford, should reach him by 3rd February.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), post vacant now. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, West Cornwall Hospital, Penzance.

PONTEFRACT GENERAL INFIRMARY AND THE HYDES HOSPITAL. (92 Beds.) Required, HOUSE SURGEON (first post), Male. 6 months' appointment. Salary at rate of £350 p.a., less £100 for residential emoluments. R practitioners within 3 months of qualification may apply.

Applications should be sent to—
W. BOWRING, Secretary,
Pontefract and Castleford Hospital Management Committee.
Great Northern House, Salter-row, Pontefract.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) Required, HOUSE OFFICER (medical), post vacant from 1st February. Appointee will work under the directions of the Consultant Physician and the Pædiatrician. Salary £350–£450 p.a., in accordance with the number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MON. (115 Beds.) Required, HOUSE OFFICER (surgical), post vacant from 12th February. Salary £350–£450 p.a., in accordance with the number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with the names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

PETERBOROUGH MEMORIAL HOSPITAL AND OBSTETRIC ANNEXES. PETERBOROUGH AREA HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (obstetrics and gynæcology). There are 1200 deliveries annually. The appointment will be for 6 months, commencing 11th February, 1951.

Applications, with testimonials, should be addressed to the Secretary, Memorial Hospital, Midland-road, Peterborough.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST required, post now vacant. Salary and conditions of service in accordance with the National Health Service scale, £350–£450 p.a. with a deduction of £100 p.a. in respect of full residential emoluments.

Applications should be forwarded to the Secretary of the Hospital.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON, post now vacant. Conditions of service and salary scale in accordance with national agreements, with a deduction of £100 p.a. in respect of full residential emoluments. The Hospital is recognised by the Royal College of Surgeons.

Applications to be forwarded to the Secretary of the Hospital.

POOLE GENERAL HOSPITAL, Poole, Dorset. (184 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN, post now vacant. Conditions of service and salary scale in accordance with national agreements, with a deduction of £100 p.a. in respect of full residential emoluments.

Applications to be forwarded to the Secretary of the Hospital.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Royal Portsmouth Hospital (305 acute Beds)

ORTHOPÆDIC HOUSE SURGEON required, vacant 3rd February, 1951. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

SENIOR HOUSE OFFICER, Casualty Department, required, vacant 22nd February, 1951. Salary £670 p.a., less £150 for residential emoluments.

HOUSE SURGEON required, vacant now. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Saint Mary's Hospital (1100 general Beds)

HOUSE SURGEON required, vacant 1st March, 1951. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

Gosport War Memorial Hospital (68 general Beds)

HOUSE SURGEON required, vacant now. Salary £350–£450 p.a., according to experience, less £100 for residential emoluments.

All applications should give details of age, experience, and qualifications, and the names of 2 referees, and should be submitted to the Secretary, 35, Grove Road-south, Southsea.

RAMSGATE. THE GENERAL HOSPITAL. (101 Beds.) ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON. Appointment will be for a period of 6 months. Salary at rate of £350 p.a., less £100 for residential emoluments. R practitioners within 3 months of qualification may apply.

Applications, stating age, and qualifications, together with copies of 3 recent testimonials, should be sent as soon as possible to the Administrator, The General Hospital, Ramsgate.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for position of SENIOR HOUSE OFFICER (chest diseases). Previous experience desirable. The successful applicant will be a member of the chest team for the Rochdale group of hospitals and will be required to reside at Wolstenholme Pulmonary Hospital. The appointment is for 1 year and the salary will be £670 p.a., less a deduction for board and lodging.

Applications, stating age, qualifications, experience, and giving the names of 2 referees, should be sent to the undersigned immediately. S. HODKINSON, Secretary.

Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD GENERAL HOSPITAL. (572 Beds.) SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for the now vacant appointment of RESIDENT HOUSE SURGEON for a period of 6 months. Salary that for House Officer grade according to previous number of appointments held.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials, should be forwarded to the undersigned at the General Hospital, Rochford, Essex, not later than 1st February, 1951.

J. C. FIELD, Secretary.

ROCHFORD GENERAL HOSPITAL. (572 Beds.) Applications invited from registered medical practitioners for appointment of RESIDENT HOUSE MEDICAL OFFICER (House Officer grade). Post vacant 12th February and is suitable for a recently qualified practitioner. Duties principally in connection with hospital admissions. Salary in accordance with number of previous appointments held.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials, to be sent to the undersigned at the General Hospital, Rochford, Essex, not later than 1st February, 1951.

J. C. FIELD, Secretary,
Southend-on-Sea Hospital Management Committee.

REDRUTH. CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL. WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, FIRST HOUSE SURGEON (Male or Female) to the Obstetric and Gynæcology Departments, commencing 1st March, 1951. Salary and conditions in accordance with Ministry of Health regulations. The Hospital has been recognised in obstetrics for M.R.C.O.G.

Applications, stating age, qualifications, and experience, and accompanied by copies of 3 recent testimonials, should be sent to the Administrative Assistant by 31st January, 1951.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Required, HOUSE SURGEON at above Hospital. Resident post tenable for 6 months. Salary, &c., as per Ministry of Health scale for House Officers, less £100 a year for board and lodging, &c.

Applications, stating age, qualifications with dates, present appointment, and experience, with copies of 2 testimonials of recent date or names of 2 referees, should reach the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, not later than 26th January, 1951.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for appointments as GENERAL PRACTITIONER/CLINICAL ASSISTANTS at :—

(*a*) Tredegar General Hospital, Tredegar, Mon. (56 Beds for mainly general surgery, with outpatient clinics in other specialties.) Anæsthetists duties divided up as to 2 sessions for "list" work and half-session for emergency work per week.

(*b*) St. James Hospital, Tredegar, Mon. (159 Beds for acute and chronic medical sick and obstetric cases.) Anæsthetist duties on the Obstetric Unit (estimated on average at 1 session per week).

(*c*) Oakdale Hospital, Oakdale, Mon. (16 Beds for "list" male general surgery and gynæcology.) General duties (estimated at 2 sessions) and anæsthetist duties (half session per week).

Remuneration will be at the rate of £175 p.a. per session.

Further information can be obtained from the Secretary, Hospital Management Committee, District Miners' Hospital, Caerphilly, to whom applications should be sent in writing stating qualifications, present duties, &c., to reach him not later than Saturday, 27th January, 1951.

SALFORD ROYAL HOSPITAL, Chapel-street, Salford, 3. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

3 SENIOR SURGICAL HOUSE OFFICERS, vacant February and March.

SENIOR MEDICAL HOUSE OFFICER, vacant March.

Resident or non-resident. Salary in accordance with the terms and conditions of service for hospital medical staff.

Applications, with copies of 3 testimonials, should be addressed to the Superintendent at the Hospital on or before 30th January, 1951.

SALISBURY GENERAL HOSPITAL. (Salisbury Infirmary and Odstock Hospital—470 Beds.) Required, RESIDENT HOUSE PHYSICIAN. The appointment is vacant on 6th March, 1951, and is for a period of 6 months. Salary and conditions of service are in accordance with the terms for medical staff in hospitals.

Applications, together with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, not later than the 31st January, 1951.

SALISBURY GENERAL HOSPITAL. (Salisbury Infirmary and Odstock Hospital—470 Beds.) Required, RESIDENT HOUSE SURGEON. Appointment vacant on 14th February, 1951, and is for a period of 6 months. Salary and conditions of service are in accordance with the terms for medical staff in hospitals.

Applications, together with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, not later than the 24th January, 1951.

SALISBURY GENERAL HOSPITAL. (Salisbury General Infirmary and Odstock Hospital—470 Beds.) Required, RESIDENT HOUSE SURGEON to the E.N.T. Department. The department is now officially recognised for the D.L.O., and consists of 40 Beds together with busy outpatient and audiometric clinics. The appointment is for a period of 6 months and is now vacant. Salary and conditions of service in accordance with the terms for medical staff in hospitals.

Applications, together with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, not later than 24th January, 1951.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. (Incorporating Salisbury General Infirmary and Odstock Hospital.) Required, RESIDENT ANÆSTHETIST (Senior House Officer), for duties at both branches of the Salisbury General Hospital. Appointment vacant on the 4th February, 1951, and is for a period of 12 months. Salary and conditions of service in accordance with the terms for hospital medical staff.

Applications, giving details of qualifications, and experience in the specialty, together with the names of 3 referees, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, to be received not later than 24th January, 1951.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE SURGEON (resident) required immediately. Post tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. Required, HOUSE OFFICER, post vacant early March, 1951. Salary in accordance with national scale. Preference given to those intending to specialise in pædiatrics. Hospital recognised by Conjoint Board for D.C.H.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of 3 testimonials, should be forwarded to reach the Secretary at the Southampton Children's Hospital not later than 3rd February, 1951.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. BOROUGH GENERAL HOSPITAL. Applications are invited by the Southampton Group Hospital Management Committee for whole-time post of SENIOR HOUSE OFFICER (E.N.T.) at the above Hospitals. Occasional work at other hospitals may be required. The post provides experience in all branches of E.N.T. work including audiometry. The group includes a diagnostic and distributing hearing-aid centre. Salary £670 p.a., from which a deduction will be made for residential emoluments.

Applications, with copies of 3 recent testimonials, to be forwarded as soon as possible to the Secretary, Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) HOUSE SURGEONS (3) required. Posts now vacant. Tenable for 6 months. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHEND-ON-SEA GENERAL HOSPITAL, Prittlewell Chase, SOUTHEND-ON-SEA. HOUSE SURGEON (House Officer grade) required for duties in Special Departments (Eyes and E.N.T.). Salary according to previous appointments held, less deductions for board.

Applications, with details of qualifications, &c., with copies of recent testimonials, to reach undersigned at the Hospital as soon as possible. J. C. FIELD, Secretary.

STAFFORD. STANDON HALL ORTHOPÆDIC HOS-PITAL, near ECCLESHALL, STAFFORD. Required, SENIOR HOUSE OFFICER (Male or Female). Salary £670 p.a., less deduction for residential emoluments.

Applications, stating age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded forthwith to— H. H. JONES, Secretary,

Stafford Hospital Management Committee.

13, Foregate-street, Stafford.

STOCKPORT INFIRMARY. (175 Beds.) Applications are invited from registered medical practitioners for the posts of :—

HOUSE OFFICER (general surgery and gynæcology).

HOUSE OFFICER (general surgery and ophthalmology), approved under D.O.M.S. regulations.

Salary and conditions of service in accordance with Ministry of Health circular.

Applications, stating age, nationality, and qualifications, together with the names of 2 referees or copies of 2 testimonials, to be addressed to the Administrative Officer, Stockport Infirmary. H. G. PRICE, Secretary, Stockport and

Buxton Hospital Management Committee.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited from registered medical practitioners for the non-resident post of SENIOR REGISTRAR (diagnosis) to the Department of Radiology, at the above Hospitals. Candidates must have had previous experience and possess a qualification in radiology.

Applications, stating age, qualifications, and experience, together with the names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.
Central Office, The Royal Hospital, West-street, Sheffield, 1.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST required. Appointment in accordance with terms and conditions of service for hospital medical and dental staffs, and £100 p.a. will be deducted for residential emoluments. Post recognised for the D.A.

Applications, stating age, nationality, qualifications, and previous hospital appointments, accompanied by copy testimonials, should be sent as soon as possible to—

J. P. MALLETT, Secretary,
Shrewsbury Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 30th December, 1950.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER (Male or Female), vacant immediately. Salary £350–£450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Secretary.
Royal Salop Infirmary, Shrewsbury, 23rd September, 1950.

SCOTLAND. BRIDGE OF EARN HOSPITAL. (830 Beds, of which 270 are for orthopædic cases, including bone and joint tuberculosis.) There are vacancies for 4 HOUSE SURGEONS for the Orthopædic Unit at above Hospital. Salary £350–£450 p.a., according to experience, with a deduction of £100 for board, lodging, and laundry.

Applications, stating age, qualifications, experience, and nationality, with the names of 3 referees, to be sent to the Medical Superintendent, Bridge of Earn Hospital, Perthshire, within 14 days of the appearance of this advertisement.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD invite applications from suitably qualified medical practitioners for the appointment of SENIOR REGISTRAR in Psychiatry at Crichton Royal, Dumfries, for 1 year in the first instance. Appointment subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating age, qualifications, experience, present appointment, and giving the names of 3 referees, should be submitted not later than 3rd February, 1951, to the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2.

ST. HELENS. ECCLESTON HALL HOSPITAL. Required, SENIOR HOUSE OFFICER at the above Hospital. Salary £670 p.a., less £150 p.a. for residential emoluments. The person appointed will work under the supervision of the Tuberculosis Medical Officer, who is also on the staff of this Hospital. There are 75 Beds and the work comprises all types of tuberculosis. The appointment may also include duties at another hospital in the group which is about to be converted for the treatment of tuberculosis. Good residential accommodation for a single person, male or female, is available.

Applications to be forwarded immediately to—

N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs

ST. HELENS HOSPITAL. (183 Beds.) Required, Resident HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded as soon as possible to—

N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

SCARBOROUGH HOSPITAL, Yorkshire. (163 Beds.) Applications invited from Male or Female registered medical practitioners for post of RESIDENT HOUSE PHYSICIAN. Salary in accordance with the national scale and the appointment will be for 6 months.

Applications, stating age and qualifications, with testimonials, to be sent to the Secretary.

STOKE-ON-TRENT. BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) Required, SENIOR HOUSE OFFICER (surgical). Post tenable for 12 months. Salary in accordance with national scale—i.e., £670 p.a. gross.

Applications, giving age, nationality, and details of previous service, including national service, should be addressed to the undersigned at Princes-road, Hartshill, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. BURSLEM HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. HOUSE OFFICER (medical) required, post vacant very shortly. Salary in accordance with the National Health Service scale for House Officers. Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, as soon as possible to— THORNBURROW GIBSON, Secretary,

Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Required, SENIOR HOUSE OFFICER (pathological). Salary in accordance with National Health Service scale—i.e., £670 p.a., and the post is tenable for 1 year.

Applications, stating age, nationality, and details of previous service, including national service, should be forwarded to the Medical Superintendent at the Hospital as soon as possible.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. Applications invited for the following posts:—

SENIOR HOUSE OFFICER (orthopædics), vacant 1st March. Tenable for 12 months and recognised for F.R.C.S.

HOUSE OFFICER (second or third post), medical, vacant 1st March.

HOUSE OFFICER (second or third post), ophthalmics, vacant shortly. Recognised for D.O.M.S. and F.R.C.S.

Applications, stating age, nationality, and full details of previous service, including national service, should be forwarded to the undersigned at Princes-road, Hartshill, Stoke-on-Trent, as soon as possible.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. HAYWOOD HOSPITAL. (96 Beds.) Required, HOUSE OFFICER (surgical), second post. Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, to undersigned at Princes-road, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited for the following posts within group hospitals :—

North Staffordshire Royal Infirmary (475 Beds)

HOUSE OFFICER (orthopædic), first post.

HOUSE OFFICER (E.N.T.), second or third post. Recognised for D.L.O.

HOUSE OFFICER (general surgery), second post. Recognised for F.R.C.S.

HOUSE OFFICER (surgical), first post, combining main duties at Longton Hospital (55 Beds).

Bucknall Isolation Hospital (202 Beds)

HOUSE OFFICER (medical), second or third post.

Salary in all cases in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including national service, to the undersigned at Princes-road, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary.

STONEHOUSE, GLOS. STANDISH HOUSE SANATORIUM. (278 Beds.) Required, JUNIOR RESIDENT MEDICAL OFFICER (second or third post), Male or Female, in the above Tuberculosis Sanatorium, post now vacant. Salary is at the rate of £350–£450 p.a., according to posts held, less £100 for residential emoluments which include board, furnished apartments, and laundry.

Applications, together with copies of 3 testimonials, should be addressed to the Secretary, Standish House Hospital Management Committee, at Standish House Sanatorium, Stonehouse, Glos.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON to the E.N.T. Department at the above Hospital. The salary will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON at the above Hospital. The salary will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE PHYSICIAN at the above Hospital. The salary will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON at the above Hospital. The salary will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE PHYSICIAN at the above Hospital. The salary will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON in the Neurosurgical Department (second or third appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT CASUALTY OFFICER (second or third appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (first or second appointment). Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWINDON HOSPITALS. (500 Beds.) Required, House PHYSICIAN in the Acute Medical Unit of 64 Beds at St. Margaret's Hospital. Salary, &c., in accordance with national scale; full residential emoluments. The post will fall vacant on 1st March, 1951.

Applications, stating age, qualifications, and experience, with the names of not more than 3 referees should be sent to the Secretary, Swindon and District Hospital Management Committee, Victoria Hospital, Swindon, as soon as possible.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. ORTHOPÆDIC HOUSE SURGEON required, post vacant 7th February. National salary scale.

Applications, giving details of age, qualifications, and experience, with dates, together with copies of 2 testimonials to be sent to the Administrative Officer.

TAPLOW, MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL.

HOUSE PHYSICIAN required, post vacant 15th March. Salary on national scale.

OBSTETRIC HOUSE SURGEON required. Hospital recognised for the M.R.C.O.G. Preference will be given to candidates who have had previous experience in midwifery and gynæcology. Salary on national scale.

Applications, giving details of age, experience, and qualifications, with dates, and with copies of 2 recent testimonials, to be sent to the Administrative Officer.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—230 Beds; 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, CASUALTY HOUSE SURGEON (Male or Female), post vacant 7th February, 1951. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, giving details of age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—230 Beds; 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications invited for vacant post of HOUSE SURGEON (Male or Female) for General Surgery and Gynæcology. The successful candidate will be responsible jointly with the House Surgeon for the 74 Beds allocated to the 2 specialties. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

VENTNOR. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST, ISLE OF WIGHT. (250 Beds.) VENTNOR HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (resident), unmarried, post vacant 1st March. Hospital has all facilities for major thoracic surgery.

Applications, stating age, qualifications, experience, nationality, and names of 2 referees, should be sent to the Physician-Superintendent.

WAKEFIELD. CLAYTON HOSPITAL. (200 Beds.) Required, RESIDENT HOUSE PHYSICIAN at the above Hospital. Salary and conditions of service in accordance with national scale and recommendations.

Applications, giving full particulars, together with the names of 3 referees, should be addressed to—

W. READ, Secretary, Hospital
Management Committee No. 9, Wakefield A Group.

WARWICK. CENTRAL MENTAL HOSPITAL, near WARWICK. (1600 Beds.) BIRMINGHAM REGIONAL HOSPITAL BOARD invite applications for appointment of SENIOR REGISTRAR at above Hospital, including Neurosis Unit and clinics for adults and children. Candidates should possess D.P.M. (postgraduate instruction available). House available. Appointment in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 5th February. Canvassing will disqualify. Candidates may visit group hospitals.

WARWICK HOSPITAL. (253 Beds.) South Warwickshire HOSPITAL GROUP NO. 14. Required, RESIDENT HOUSE SURGEON (Male or Female). Good experience in general and thoracic surgery units. Salary at the rate of £350–£450, depending upon experience, less £100 p.a. for residential emoluments.

Applications, with 2 recent testimonials, should be sent to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

WARWICK HOSPITAL. (253 Beds.) South Warwickshire HOSPITAL GROUP NO. 14. Required, RESIDENT SECOND ORTHOPÆDIC HOUSE SURGEON. Well-equipped Orthopædic and Fracture Unit of 51 Beds linked with Casualty Department. Salary £350–£450, according to experience, less £100 for residential emoluments.

Applications, with 2 recent testimonials, should be forwarded to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) Required, HOUSE SURGEON at the above Hospital, to commence in March, 1951. The appointment is recognised for the Diploma of F.R.C.S. (Edinburgh). Salary will be at rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WINDSOR. KING EDWARD VII HOSPITAL.

HOUSE SURGEON required immediately. Salary on national scale.

HOUSE SURGEON required, post vacant 1st March. Salary on national scale.

ORTHOPÆDIC AND ACCIDENT SERVICE HOUSE SURGEON required, post vacant 6th March. Salary on national scale. Duties include House Surgeon in general surgery.

Applications, with copies of recent testimonials, stating age, qualifications with dates, and nationality, to be sent to the Administrative Officer.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (326 Beds.) WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Senior Surgeon, vacant 22nd January, 1951. Salary £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (326 Beds.) WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Orthopædic Department, vacant immediately. Salary at the rate of £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, with copies of 2 testimonials, should be sent to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (326 Beds.) WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required, vacant 1st March. General surgery and work in the E.N.T. Department. Salary at the rate of £350, £400, or £450 a year, according to experience, less £100 for board and residence.

Applications, together with 2 testimonials, should be sent to the Secretary.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE, GROUP NO. 16, BIRMINGHAM REGION. Applications invited from registered medical practitioners for following appointments :—

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

HOUSE SURGEON (Fracture and Orthopædic Department), vacant now.

SENIOR HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

HOUSE SURGEON (Ear, Throat and Nose Department), vacant now.

SENIOR HOUSE OFFICER (Ear, Throat and Nose Department), vacant 1st February, 1951.

HOUSE PHYSICIAN (pædiatric). Appointment recognised for D.C.H., vacant shortly.

HOUSE SURGEONS (general surgery), vacant shortly.

The Royal Hospital (Women's Branch), recognised for the examination of M.R.C.O.G.

RESIDENT MEDICAL OFFICER, vacant shortly.

New Cross Hospital, Wolverhampton

HOUSE PHYSICIAN, vacant 1st February, 1951.

All appointments subject to terms and conditions of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary,

The Royal Hospital, Wolverhampton.

WORCESTER ROYAL INFIRMARY. (300 Beds.) Required, HOUSE SURGEON (general surgery), post now vacant. The appointment is for 6 months and the terms are in accordance with the terms and conditions for hospital medical staff.

Applications, with full details and copies of testimonials should be sent to the Secretary.

WHISTON. COUNTY HOSPITAL. (880 Beds.) Required, RESIDENT HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded to the undersigned as soon as possible. N. RICHARDS, Secretary, St. Helens and District Hospital Management Committee.

Group Office, County Hospital, Whiston, near Prescot, Lancs.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a post as ASSISTANT MEDICAL OFFICER attached to the Special Care Service of the Authority. This Service is responsible for the ascertainment of persons requiring special care within the meaning of the Mental Health Act (Northern Ireland), 1948, together with the provision of institutional and community care. Applicants must be prepared to carry out duties anywhere in Northern Ireland. The post will be on a whole-time basis for which the salary will be on the scale of £700–£50–£1000 p.a. Contributions will be payable under the Health Services superannuation scheme. It is the Authority's policy to give preference to persons who have served in war-time in H.M. Forces.

Applications should be made on a form which may be obtained from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, which must be returned to him so as to be received not later than 31st January, 1951. Canvassing will disqualify. Any approach to a member of the Authority by or at the request of a candidate for the purpose of obtaining support for his application will be treated as canvassing.

NORTHERN IRELAND HOSPITALS AUTHORITY. FERMANAGH COUNTY HOSPITAL. RESIDENT HOUSE PHYSICIAN (second or third post), required immediately, for general medical duties. Salary and conditions of service as prescribed by the N.I. Hospitals Authority.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be received not later than 5th February, 1951, by the Secretary, Fermanagh County Hospital, Enniskillen, Northern Ireland.

NEW ZEALAND. WELLINGTON HOSPITAL BOARD, WELLINGTON, NEW ZEALAND. Applications invited from medical practitioners either registered or eligible for registration in New Zealand for the position of RESIDENT MEDICAL OFFICER, Silverstream Hospital. Applicants should be interested and, if possible, experienced in geriatrics. Salary scale in accordance with the hospital employment regulations—namely, £NZ.1100 p.a., rising to £NZ.1400 p.a. by annual increments of £NZ.50. Unfurnished house suitable for a married man and family is provided in the hospital grounds. Full particulars of the position are given in a schedule of information, copies of which may be obtained upon application to the High Commissioner for New Zealand, 415, The Strand, London, W.C.2.

Applications, giving full particulars as to age, whether married or single, qualifications, experience, and when available to commence duty, should be forwarded by air mail to reach the undersigned not later than Wednesday, 28th February, 1951. Copies of recent testimonials should also be forwarded.

A. F. WILTON, Acting Secretary.

NEW YORK. UNITED HOSPITAL, Port Chester, New YORK, U.S.A., 200 Beds, fully approved, general hospital, offers 1 year rotating INTERNSHIP to graduates of approved medical schools, period beginning 1st July, 1951. Stipend $100 monthly, plus full maintenance.

Address application to Superintendent, United Hospital, 406, Boston Post-road, Port Chester, New York, U.S.A.

Public Appointments

BOARD OF CONTROL. Applications are invited for the post of SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER at Moss Side Hospital, Maghull, near Liverpool (460 Beds). The Hospital accommodates patients exhibiting conduct disorders with mental deficiency and provides excellent opportunities for the study, treatment, and training of behaviour disorders of all kinds and degrees. Applicants must be registered medical practitioners. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), dated 7th June, 1949, as amended, and will be subject to the National Health Service (Superannuation) Regulations, 1950. Furnished quarters and attendance (but not food) are provided at a cost of £70 p.a.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service (if any), and present and previous appointments, with names and addresses of 3 referees, should reach the Medical Superintendent, Moss Side Hospital, Maghull, near Liverpool, not later than 2nd February, 1951. Envelopes enclosing applications should be clearly marked A/S.H.O./J.H.M.O. Canvassing in any form will lead to disqualification, but candidates may visit the hospital by direct appointment with the Medical Superintendent.

BOARD OF CONTROL. Applications are invited for the posts of :—

(*a*) SENIOR HOUSE OFFICER,

(*b*) JUNIOR HOSPITAL MEDICAL OFFICER,

at Rampton Hospital, near Retford, Nottinghamshire (1143 Beds). The Hospital accommodates patients exhibiting conduct disorders with mental deficiency and provides excellent opportunities for the study, treatment, and training of behaviour disorders of all kinds and degrees. Applicants must be registered medical practitioners. The appointments will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), dated 7th June, 1949, as amended, and will be subject to the National Health Service (Superannuation) Regulations, 1950. Either furnished quarters and attendance or a house on the Hospital estate will be provided at appropriate charges.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service (if any), and present and previous appointments, with names and addresses of 3 referees, should reach the Medical Superintendent, Rampton Hospital, Retford, Nottinghamshire, not later than 2nd February, 1951. Envelopes enclosing applications should be clearly marked A/S.H.O./J.H.M.O. Canvassing in any form will lead to disqualification, but candidates may visit the Hospital by direct appointment with the Medical Superintendent.

BARNSLEY. COUNTY BOROUGH OF BARNSLEY. PUBLIC HEALTH DEPARTMENT. Applications are invited from registered medical practitioners for the whole-time permanent post of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER. Salary will ultimately be in accordance with the scale applicable to the grade to be laid down by the Medical Whitley Council, Committee C. Until such time as this comes into force the salary payable is £735 p.a., rising by annual increments of £25 to £935. The duties will be concerned principally with child health in the Schools and Maternity and Child Welfare Services, together with such other duties as may be allocated by the Medical Officer of Health. Possession of the D.C.H. or the D.P.H. will be an advantage. The successful candidate will not be allowed to engage in private practice. The appointment will be subject to the appropriate superannuation provisions and to a satisfactory medical examination, and will be terminable by 3 months' notice on either side. If the successful candidate possesses a car, an allowance in accordance with the Corporation's scale will be paid.

Applications should be made on a form to be obtained from the Medical Officer of Health, Town Hall, Barnsley, and should be returned to him before the 28th February, 1951.

A. E. GILFILLAN, Town Clerk.

Town Hall, Barnsley, 10th January, 1951.

ROYAL NAVAL MEDICAL SERVICE

Candidates are invited for service as Medical Officers in the Royal Navy—preferably below 28 years.

They must be British subjects whose parents are British subjects, and be medically fit. No examination will be held but an interview will be required.

Initial entry will be for 4 years' short service after which gratuity of £600 (tax free) is payable, but permanent commissions are available for selected short service officers.

Officers entered on or after 1st January, 1951, will be eligible to be considered for ante-dates of seniority up to 2 years for service in recognized civil hospitals, etc.

For full details apply MEDICAL DIRECTOR-GENERAL, Admiralty, S.W.1.

COLONIAL MEDICAL SERVICE. In the larger Colonies MEDICAL OFFICERS are required for general duties, including hospital and district work. These appointments offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Appointments can be made on a permanent basis with pension (non-contributory) at age of 50 or 55, or on a temporary basis with gratuity. Secondment from the National Health Service can usually be arranged for periods up to 6 years with continuation of superannuation contributions and the payment of a resettlement grant on reversion to the National Health Service. Salaries range from £860 to £1630 a year, the starting salary depending upon age and experience. In most territories in Africa the scale for newly appointed doctors with an approved higher qualification is £1050–£1600 a year, with a higher point of entry according to experience. There are many specialist and administrative posts with salaries above this scale available for officers in the Service on promotion. Free passages are granted in both directions. Income-tax is very low. Tours of service vary from 10 months in Nigeria to 4 years in Kenya. Houses with heavy furniture are provided in most territories at a rent of about 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for those who wish to acquire higher qualifications. Social and recreational amenities are good. Officers serving in East and Central Africa usually prefer to educate their children within that area, where schooling is available, or in South Africa. The short tours in West Africa enable frequent visits to be made to children being educated at home. Many officers have their children with them in West Africa until they reach school age.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1. (Ref. no. 27215/14.)

DERBYSHIRE COUNTY COUNCIL. Applications are invited from Male registered medical practitioners holding the D.P.H. or an equivalent qualification for the permanent joint appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH for the Derbyshire County Council, and MEDICAL OFFICER OF HEALTH for the Borough of Glossop, and MEDICAL OFFICER OF HEALTH for the Urban District of New Mills. The total inclusive salary will be £1100 p.a., plus travelling expenses in accordance with the County Council's scale. The person appointed will be directly responsible to the Councils of the Borough of Glossop and the Urban District of New Mills for the proper performance of all the duties of a Medical Officer of Health for those areas respectively. As Assistant County Medical Officer he will be concerned, under the direction of the County Medical Officer of Health, with decentralised supervision required under the National Health Service Act, as well as work in connection with school medical inspection, attendance at clinics, and such other duties as may be required. The person appointed must reside in Glossop or New Mills (dwelling-house accommodation would be available at Glossop), must not engage in private practice, and must devote his whole-time to the duties of the before-mentioned posts. The successful candidate will be required to pass a medical examination. The joint appointment, which is superannuable, is terminable by 3 months' written notice on either side.

Application forms may be obtained from the undersigned, to whom they should be returned within 14 days of the appearance of this advertisement. Canvassing, either directly or indirectly, will be a disqualification.

J. B. S. MORGAN, County Medical Officer of Health.
County Offices, St. Mary's Gate, Derby.

FACTORY DOCTORS: Factories Acts, 1937 and 1948. The following appointments as Appointed Factory Doctor under the Factories Acts, 1937 and 1948, are vacant. Applications should be sent to the Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
BRAEMAR	.. ABERDEEN	.. 3RD FEBRUARY, 1951
KEMNAY	.. ABERDEEN	.. 3RD FEBRUARY, 1951
GATESHEAD	.. DURHAM ..	.. 3RD FEBRUARY, 1951

HIS MAJESTY'S COLONIAL SERVICE, Northern RHODESIA. A MEDICAL OFFICER is required for duty in the Silicosis Medical Bureau of the Health Department, Northern Rhodesia. The duties include medical examination of candidates for employment and employees in occupations involving exposure to dangerous mineral dust, and investigation of the history, clinical findings, and chest X ray of every person examined. The total of persons and X rays examined by the Bureau averages about 100 a day. The appointment may be on a permanent basis, subject to 2 years' residential service on probation, with pension (non-contributory) at retiring age of 55, or on secondment from the National Health Service for a period up to 6 years, without loss of superannuation rights and the payment, on reversion to the National Health Service, of a resettlement grant of 20% of the aggregate of salary during the period of secondment. Salary is in the scale £865–£1590 a year, the point of entry being dependent upon the candidate's age and experience. A cost-of-living allowance is also paid. Free passages in both directions for an officer, his wife, and up to one full fare in respect of children. Income-tax is very low. Tours of service are of approximately 3 years' duration. Housing with heavy furniture is provided at a rental of not more than 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for permanent officers who wish to acquire higher qualifications. Social and recreational amenities are good. Education is available for children within the territory. Candidates (Male only) should be between 25 and 35 years of age and should possess registrable medical qualifications and have had at least twelve months' postgraduate experience.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference no. 27215/177/50).

HIS MAJESTY'S COLONIAL SERVICE. Federation of MALAYA. A BACTERIOLOGIST is required for duty in the Institute for Medical Research, Malaya. The appointment is the junior of 2 posts in the Division of Bacteriology. The duties are mainly bacteriological routine but there are good facilities for research and original work is expected once the officer has settled down and knows the country. Appointment will be on 3 years' probation for permanent employment, with pension (non-contributory) at retiring age of 55, or on secondment from the National Health Service for periods up to 6 years without loss of superannuation rights, and the payment, on reversion to the National Health Service, of a resettlement grant of 20% of the aggregate of salary during the period of secondment. Salary, including pensionable expatriation pay, is in the scale $(Malayan) 670–$1065 a month (£938–£1491 a year; 1 Malayan dollar equals 2s. 4d.). The point of entry into the salary scale is dependent upon the candidate's age and experience. A cost-of-living allowance is also paid. Free passages in both directions for an officer, his wife, and 3 children under the age of 10. Income-tax is low. Tours of service are from 3–4 years' duration. If available, housing is provided at rentals of $15–$60 a month (£21–£84 a year), according to class of quarters, and heavy furniture at $2.50–$6.00 a month (£3 10s.–£8 8s. a year). If Government quarters are not available an allowance may be granted if the rent paid exceeds that charged for Government quarters. Annual local leave is permissible and generous home leave is granted after each tour. Study leave on full pay is available for permanent officers who wish to acquire higher qualifications. Social and recreational amenities are good. The climate of Malaya is, for the tropics, good. Candidates should, preferably, be under 35 years of age and should possess a medical qualification registrable in the United Kingdom, with a good academic record. Experience in bacteriology is desirable. Postgraduate clinical experience and an aptitude for investigation would be strong assets.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1, quoting reference no. 27215/297.

HIS MAJESTY'S COLONIAL SERVICE, Nigeria. Doctors with at least 1 year's experience after qualification are required for general duties, including hospital and district work, in the Medical Department of the Government of Nigeria. Medical Officers of Health, Pathologists, Malariologists, Leprosy and Research Medical Officers are also needed. General duties posts offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Doctors possessing approved higher qualifications are appointed for general duties at a higher starting salary under the title "Special Grade Medical Officers" and are posted as far as possible where their special qualifications can best be employed. Appointments can be made (1) on a permanent basis with pension (non-contributory) at retiring age of between 45 and 55; (2) on secondment from the National Health Service for periods not exceeding 6 years without loss of pension rights under National Health Service superannuation regulations, and the payment on termination of secondment of a gratuity of 20% of the aggregate of salary received during the period of secondment; or (3) on a purely temporary basis with special contract terms as follows:—

(1) Annual salary. The salary scale, including expatriation pay and cost-of-living allowance, is from £1224 a year, rising to £2045 a year. An officer's starting salary within this scale depends upon his age, experience, and war service. The inclusive scale for Special Grade Medical Officers is £1400 a year to £2045 a year, with increments above the minimum in accordance with age, experience, and war service.

(2) Gratuity. A gratuity is payable at the rate of £37 10s. for each completed period of 3 months' service (including leave).

(3) Passages. Free first-class air passages each way for the officer and by air or sea for his wife and up to 2 children on each tour of service.

(4) Duration of contract. 2–4 tours of 10 months each in the first instance.

(5) Leave. 2 months' leave in the United Kingdom is granted at the end of each tour and the balance earned on completion of contract.

(6) Quarters. Quarters are provided with furniture but not household effects, at rental ranging from £90–£150 a year.

(7) Income-tax. Income-tax is payable at local rates which are very low compared with those in the United Kingdom.

(8) Car. Advances to buy cars are granted and car allowances are paid.

(9) Outfit allowance. An outfit allowance of £60 is paid on appointment.

Many officers have their wives and children with them in Nigeria. The short tours enable frequent visits to be made to children at school in the United Kingdom. Officers appointed on the special contract terms or on secondment may be considered for transfer to the permanent and pensionable establishment if they wish.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1, quoting reference no. 27215/89.

MANCHESTER. CITY OF MANCHESTER EDUCATION COMMITTEE. Applications are invited from registered medical practitioners for the part-time appointment (2 sessions each week) of CONSULTANT OPHTHALMOLOGIST in the School Health Service. Candidates should hold a recognised qualification in ophthalmology. Remuneration will be £6 6s. per session of 3 hours and pro rata for shorter periods.

Forms of application and conditions of appointment may be obtained from the Chief Education Officer, Education Offices, Deansgate, Manchester, 3, to whom applications should be returned not later than 10th February, 1951. Canvassing in any form is prohibited.

January, 1951. PHILIP B. DINGLE, Town Clerk.

AMENDED ADVERTISEMENT

LEICESTER. CITY OF LEICESTER EDUCATION COMMITTEE. Applications are invited for the post of SENIOR ASSISTANT SCHOOL MEDICAL OFFICER AND ASSISTANT MEDICAL OFFICER OF HEALTH from registered medical practitioners holding recognised qualifications in public health or state medicine. The appointment is primarily that of Senior Assistant to the Senior Medical Officer (Education), but the duties in addition to work in connection with the School Health Service will include those of Assistant Medical Officer of Health. The Officer appointed will work under the general control of the Medical Officer of Health, who is also School Medical Officer, and will be expected to carry out the above duties and such other duties as are assigned to him. The salary scale has been provisionally fixed at £950–£50–£1250 p.a. The commencing salary will be determined by reference to the applicant's previous experience. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, is terminable by 3 months' notice on either side, and the successful candidate will be required to pass a medical examination.

Further details of the appointment may be obtained by reference to the undersigned, and applications, together with copies of 3 testimonials, should be received by 3rd February, 1951. ELFED THOMAS, Director of Education.

Education Department, Newarke-street, Leicester.

NATAL PROVINCIAL ADMINISTRATION. PATHOLOGICAL LABORATORY SERVICE. Vacancies: Junior Assistant Pathologists and Assistant Clinical Pathologist. Applications are invited for appointment to the under-mentioned vacant posts in the Administration's Laboratories. Commencing salary in each case will be determined by experience. In addition a cost-of-living allowance at current Public Service rates is payable, i.e., £208 p.a. for a married man, and £50 p.a. for a single man.

(*a*) JUNIOR ASSISTANT PATHOLOGISTS: £400–£100–£800. Successful applicants will be required to work in the hospital clinical laboratories under the direction of the hospital Pathologist. The posts are suitable for persons wishing later to specialise in pathology.

(*b*) ASSISTANT CLINICAL PATHOLOGIST: £1000–£50–£1350. Appointment in the first place will be on contract for 3 years. Applicants should have general experience of clinical pathology. The duties will include visiting the Country Hospital laboratories throughout Natal.

Applications should be addressed to the Senior Pathologist, P.O. Box 49, Jacobs, Natal, South Africa.

WORCESTERSHIRE COUNTY COUNCIL. Applications are invited from suitably qualified medical Women for the appointment of SENIOR ADMINISTRATIVE MEDICAL OFFICER for Maternity and Child Welfare. The appointed officer will act under the general direction of the County Medical Officer and will be engaged in the main on the administrative duties of the maternity and child welfare scheme although some clinical or other work may be required to be undertaken. The appointment will be terminable by 3 months' notice by either party. The salary will be at the rate of £1035, rising £50 biennially to £1222 10s. p.a., or in accordance with any other national scale which may become operative. The appointment will be superannuable and will be subject to a satisfactory medical examination. The successful applicant will be required to reside in or near Worcester and should be in possession of and be able to drive a car for which a travelling allowance in accordance with the Council's scale will be paid.

Applications, on forms to be obtained from the County Medical Officer, County Buildings, Worcester, should be submitted to him with not more than 3 recent references not later than 31st January, 1951.

W. R. SCURFIELD, Clerk of the Council.

Shirehall, Worcester, January, 1951. (N67.)

WARWICKSHIRE COUNTY COUNCIL. COUNTY MEDICAL OFFICER OF HEALTH'S DEPARTMENT. Applications are invited from Male registered medical practitioners for 2 permanent appointments of ASSISTANT COUNTY MEDICAL OFFICERS OF HEALTH. Preference will be given to those holding D.P.H. or D.C.H. and with previous experience. Salary according to experience within the following special County scale: £900–annual increments of £50–£1250, with bonus consolidated. The posts are superannuable and appointment is subject to the production of a satisfactory medical certificate. Each successful candidate will be required to provide and use a motor-car in the performance of his duties for which a mileage allowance is payable.

Further particulars (including details of areas) and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 5th February, 1951.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 10th January, 1951.

MIDDLESEX COUNTY COUNCIL. COUNTY HEALTH DEPARTMENT. SENIOR ASSISTANT MEDICAL OFFICER (Male), whole time, required initially in Area 6 (Wembley and Willesden) for administrative duties and certain amount of clinical work. Should have been previously approved by Ministry of Education for ascertainment of educationally subnormal children. May be required to undertake duties as Medical Officer of Health or Deputy of one or more County districts in area under arrangements between the County Council and Local Authorities, subject to any adjustments of scale according to Ministry of Health regulations and appropriate award. Established, subject to medical examination and prescribed conditions. Salary £975 p.a., by 3 biennial increments of £50 and 1 of £37 10s. to £1162 10s. p.a., plus any temporary bonus (now £60 p.a.), subject to review when new scales issued.

Applications, stating age, qualifications, experience, and names of 2 referees, to Joint Area Medical Officer, 54, Winchester-avenue, N.W.6, by 3rd February (quoting H.941.L.). Canvassing disqualifies. C. W. RADCLIFFE, Clerk of the County Council.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (whole time) required initially in Area 4 (Finchley and Hendon). Duties mainly with supervision of health of mothers and young children and School Health Service. D.P.H. or D.C.H. an advantage. Salary £675–£25–£875 p.a., plus cost-of-living bonus (now £60 p.a.) subject to review. Similar or previous Local Authority service will determine commencing salary as Askwith memorandum. Subject to medical examination and prescribed conditions.

Applications, stating age, qualifications, experience, and names of 2 referees, to Joint Area Medical Officer (Hendon), Town Hall, The Burroughs, Hendon, N.W.4, by 3rd February quoting H.943.L.). Canvassing disqualifies.

C. W. RADCLIFFE, Clerk of the County Council.

General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

PRESTON. EXECUTIVE COUNCIL FOR THE COUNTY BOROUGH OF PRESTON. Applications invited from doctors wishing to undertake general medical service in the County Borough of Preston area, to fill a VACANCY which has arisen as a result of resignation. List at present approximately 3000. Residence and surgery not available. Apply, on Form E.C.16A, not later than 27th January, 1951, to W. LEYLAND, Clerk of the Council.

Overseers' Buildings, Saul-street, Preston.

Appointments: Too Late for Classification

SWANSEA HOSPITAL. (403 Beds.) Required, Resident CASUALTY OFFICER to the above Hospital. Salary will be according to the National Health Service scale—Junior Hospital Medical Officer grade.

Applications, stating age, qualifications, and experience, to be addressed to—O. C. HOWELLS, Secretary,

Glantawe Hospital Management Committee.

St. Helen's-road, Swansea.

SLEAFORD, LINCS. RAUCEBY HOSPITAL. (543 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for modernised Hospital just reopened for treatment of mental illness and nervous disorders. Candidates must have been registered 2 years. Salary £700–£50–£1000, with terms and conditions of service agreed with profession. Superannuation regulations will apply. Furnished or unfurnished house available with or without board, service, &c., at agreed charge. Further particulars from Medical Superintendent who will also arrange a visit if desired.

Applications, stating age, qualifications, and experience, should be received within 10 days.

W. G. KEY, Secretary,

Lincoln No. 3 Hospital Management Committee.

Harmston Hall, Lincoln.

Miscellaneous

Applications are invited from registered medical practitioners for the position of Assistant Medical Officer to the staff of an Oil Company in Trinidad, B.W.I. Duties will be of a general medical nature. Salary not less than £800 p.a., together with marriage and family allowances. Quarters provided.—Apply, with full particulars, to the Personnel Officer, TRINIDAD LEASEHOLDS LIMITED, Old Burlington-street, London, W.1.

Temporary Assistant Medical Officer, age 25-35, required by large Oil Refinery in North West England. Appointment may become permanent at end of 1 year when candidate must be prepared to serve anywhere if required. Salary on B.M.A. scale and according to experience. State age, qualifications, experience, &c., and give names of 3 referees or copies of 3 recent testimonials.—Reply as soon as possible to: Address, No. 503, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

New Zealand. Country Practice for Sale. Within 40 miles of Auckland. Gross receipts approximately £4500. House to rent available.—Full particulars apply to MARKHAM THORP & Co., Solicitors, 4, Old Jewry, London, E.C.2.

Experienced Woman Doctor seeks change. Interested pædiatrics and rheumatology. Partnership, Assistant with view to, or other post.—Address, No. 504, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Lady (married), at present disengaged, desires position as Receptionist/Secretary to General Practitioner. Notes, forms, correspondence, telephone, hospital experience.—Telephone: WELbeck 3273.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: M.O. LABORATORIES LTD., 24, Welbeck-way, London, W.1.

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141) who are specialists in this kind of work.

New Cars stay new if the upholstery is protected by loose covers.—Write or phone: CAR COVERALL, Department 9, 168, Regent-street, London, W.1 (REGent 7124–5).

Guineapigs, Rabbits of all types for Research. Prompt delivery, keen prices.—GOODCHILD'S, near Crawley, Sussex (Telephone: Poundhill 2167).

Typewriting. Accurate speedy service. Testimonials, theses, notes.—HARRIS, 15, Arkwright Mansions, Finchley-road, N.W.3 (HAMpstead 7949).

£10 Reward for regaining stolen Large Leitz Travelling Microscope 167643.—Address, No. 502, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, January 20, 1951.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

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freedom from renal toxicity offered
sulphonamides in combination, but
greater security by employing as a
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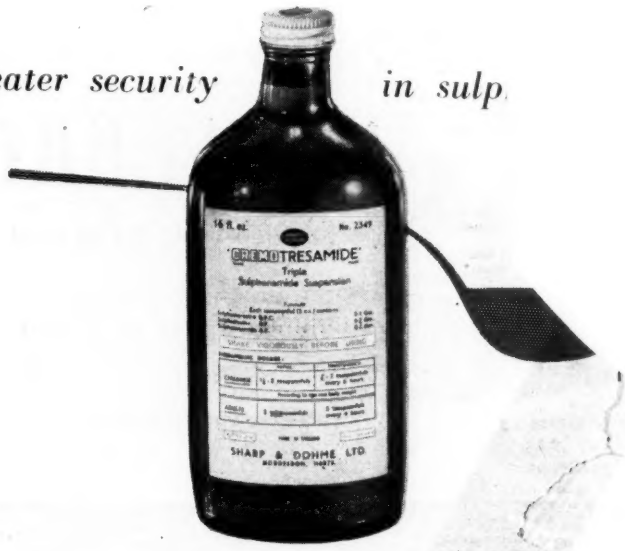

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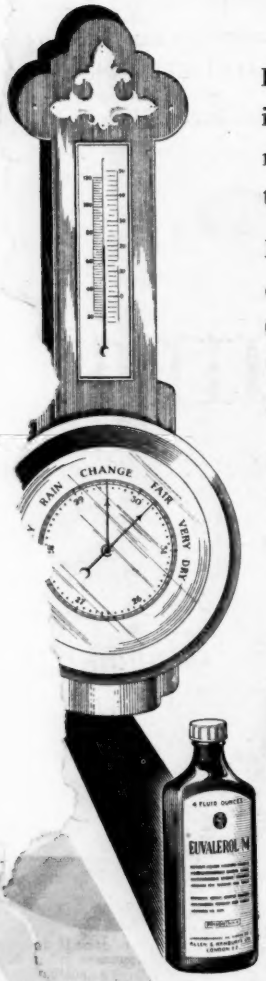

During the menopause, when the emotional outlook is as changeable as the weather, balance may be restored and the outlook 'set fair' by the administration of Euvalerol M.

Euvalerol M, containing an odourless preparation of valerian with ¼ grain (16 mg.) phenobarbitone and 0·1 mg. stilbœstrol in each fluid drachm, is designed to counteract the vasomotor and psychic disturbances of the menopause.

Diminution of symptoms, general improvement in well being and restoration of emotional stability are rapidly observed following the use of Euvalerol M.

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In bottles of 4 and 8 fluid ounces.

Literature on application.

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